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TRANSACTIONS

OF THE

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OF THE

State of North Carolina

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SEVENTY-SECOND ANNUAL SESSION

HELD AT

PINEHURST, NORTH CAROLINA

APRIL 28 and 29, 1925

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"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, Chapter 10, Section 8.*

CONTENTS

See Index, p. 675 et seq.

	PAGE
Albert Anderson, M. D.	*Frontispiece*
Committee on Publication	ii
Early History of the North Carolina Medical Society from Organization to 1804	vii
History of the Medical Society of the State of North Carolina from 1849 to 1925	viii
Roster of Members of the Various Boards of Medical Examiners of the State of North Carolina	xii
Roster of Members North Carolina State Board of Health from Organization in 1877 to 1925	xiv
State Board of Examiners for Nurses	xv
Status of Society Membership by Counties for Years 1911-1925	xvi
Honorary Fellows, Medical Society of the State of North Carolina	xviii
Honorary Members, Medical Society of the State of North Carolina	xx
Officers, 1924-1925	xx
Officers, 1925-1926	xx
Councilors, 1925-1928	xx
Chairmen of Sections, 1926	xxi
Delegates	xxi
Committees	xxi
Program of General Sessions	1
Program of Section Meetings	3
Transactions of the Seventy-Second Annual Session	7
General Sessions	7
Opening Exercises	7
Invocation—*Rev. Elmer W. Serl*	7
President's Address—*Albert Anderson, M. D.*	8
The Relation of the Physician to the Public, and Vice Versa—*C. M. Van Poole, M. D.*	19
Memorial Exercises	25
Report of Committee on Obituaries	25
Medical Laws and Licensure, with Special Reference to Operation in North Carolina—*K. P. B. Bonner, M. D.*	55
Report of the House of Delegates	69
Installation of Officers	69
Resolutions	70
Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health	71
Annual Report of the Secretary of the North Carolina State Board of Health—*W. S. Rankin, M. D., D. Sc.*	71
Executive Staff of the State Board of Health	83
Minutes of the House of Delegates	84
President's Message—*Albert Anderson, M. D.*	86
Annual Report of the Secretary-Treasurer of the Medical Society of the State of North Carolina	87
Financial Statement	89
Report of Committee to Revise the Constitution and By-Laws of the Society, and to Consider Recommendations of Some of the Past Presidents	92
Report of Committee on Public Policy and Legislation	93
Report of Committee on Publication	94
Report of Committee on Finance	94
Report of Board of Councilors	94
New Business	107
Nominating Committee	110
Report of Committee on Public Health Administration	110

PAGE

Report of Committee on Physicians' Liability Insurance 111
Report of Delegates to American Medical Association 111
Report of Committee on President's Address 113
Report of the Committee on Nominations 114
Report of Board of Councilors 116
Election of Member of State Board of Nurses' Examiners 116
Report of Committee on Physicians' Liability Insurance 116
Scientific Papers 117
Section on Public Health and Education 119
Chairman's Address: The Importance of a More Careful Diagnosis and Treatment of Minor Illnesses—*L. Jack Smith, M. D.* 119
The Increase of Mental Diseases, the Cause and Prevention—*P. V. Anderson, M. D.* 122
The Value of Observation and Experience as Applied to the Art of Living —*Cyrus Thompson, M. D.* 135
Our Handicapped Children—*M. L. Townsend, M. D.* 140
The Plan as Adopted by Beaufort County for the Control of Midwifery—*J. W. Williams, M. D.* 145
Some New Ideas Concerning the Medical Inspection of School Children—*W. S. Rankin, M. D.* 153
Section on Pediatrics 157
Chairman's Address: Some Aspects of Rickets—*Leroy J. Butler, M. D.* 157
The Anemias of Infancy and Childhood—*Charles R. Bugg, M. D.* 160
The Practical Application of Hydrotherapy—*John LaBruce Ward, M. D.* 169
The Intravenous Use of Mercurochrome in the Treatment of Some of the Diseases of Children—*Tom M. Watson, M. D.* 175
Section on Surgery 183
A Discussion of Extravasation of Urine—*Claude B. Squires, B. S., M. D.; Hamilton W. McKay, B. S., M. D.* 183
Chairman's Address: Prostatism and Its Treatment with Radium and X-ray—*H. H. Bass, M. D.* 189
Radiation Therapy of Non-Malignant Uterine Bleeding—*R. H. Lafferty, M. D.; C. C. Phillips, M. D.* 194
Appendicitis in Children with Special Reference to Drainage—*Byrd Charles Willis, M. D., F. A. C. S.* 202
Some Points in the Differential Diagnosis of Abdominal Conditions—*John P. Kennedy, M. D.* 209
Ethylene-Oxygen Anesthesia—*R. L. Wall, B. S., M. D.* 215
Tetanus—*H. H. Purinton, M. D.* 219
Section of Medical Veterans of the World War and Medical Officers' Reserve Corps 228
The Medical Reserve—*Major Glenn I. Jones, M. C., U. S. A.* 228
Psychoneuroses in Relation to Military Service—*Michael Osnato, M. D.* 237
Heart Irregularities as Related to Military Service—*Thompson Frazer, M. D.* 242
The Evacuation of Wounded with the British and Americans Contrasted—*Lt. Col. W. P. Herbert, M. D.* 243
The Importance of X-ray in Gastro-Intestinal Disorders in Soldiers—*John D. MacRae, M. D.* 251
The Medical R. O. T. C. a Factor in the Solution of the Medical Economic Situation—*Col. Joseph Howell Way, M. D.* 252
Section on Eye, Ear, Nose and Throat 261
Chairman's Address: Safeguards to Cataract Extraction—*Henry L. Sloan, A. B., M. D.* 261
A Radical Operation for the Cure of Chronic Frontal Sinusitis—*J. B. Wright, M. D., F. A. C. S.* 264
Simple Mastoid with Sinus Thrombosis and Brain Abscess as Complications —*Harry C. Willis, M. D.* 268
Mixed Obstructive and Perceptive Unilateral Deafness—*M. R. Gibson, M. D.* 271
Indications for Tonsillectomy—*Joseph B. Greene, M. D.* 275

PAGE

The Use of Morphin-Scopolamin Anesthesia in Ophthalmic Surgery—*J. Y. Malone, M. D.* 286
Tobacco and Eighth Nerve Lesions—*V. K. Hart, M. S., M. D.* 288
Personal Experiences with Focal Infections—*V. M. Hicks, M. D.* 301
Some Considerations on the Doctrine of Focal Infection—*Hiram Woods, M. D.* 308
Section on Gynecology and Obstetrics 315
Chairman's Address: Eclampsia—*Brodie C. Nalle, M. A., M. D., F. A. C. S.* 315
Better Obstetrics; How to Obtain It—*George H. Ross, M. D.* 320
Ectopic Pregnancy—*J. W. McGehee, M. D.* 330
Pyelitis of Pregnancy—*Robert L. Felts, M. D.* 335
When and Why Remove the Cervix During Hysterectomy for Benign Disease of the Uterus—*R. L. Pittman, M. D.* 338
Sterility, and Demonstration of Simplified Apparatus for Testing the Patency of the Fallopian Tubes—*Robert T. Ferguson, M. D., F. A. C. S.* 341
Synergistic Analgesia in Childbirth—*C. L. Sherrill, B. S., M. D.* 344
Section on Practice of Medicine 348
University Extension Work in Medicine—*H. W. Chase, Ph. D., LL. D.* 348
Chairman's Address: On the Teaching Function of the Medical Profession as a Whole—*Frederick R. Taylor, B. S., M. D.* 352
A Plan to Supply Physicians in the Rural Sections of the State (Using Rutherford County as an Example)—*W. C. Bostic, M. D.* 356
The Treatment of Pyelitis from the General Practitioner's Point of View —*K. C. Moore, M. D.* 362
On the Purposes and Duties of the Section on Medicine—How Can We Best Fulfill Them?—*Chas. L. Minor, M. D.* 364
Obscure Fevers—*F. M. Hanes, M. D.* 372
Some Health Problems in a Woman's College—*Anna M. Gove, M. D.* 378
Eczematoid Ringworm of the Hands and Feet—*Joseph A. Elliott, M. D.* 388
Pulmonary Syphilis—*P. P. McCain, M. D.* 391
Early Clinical Observations with the Coolidge Water-Cooled Tube in Deep Therapy—*J. Rush Shull, M. D.* 400
A Further Study of the Possible Relationship of the Monilia Psilosis to Sprue and Pernicious Anemia—*Edward Jenner Wood, M. D.* 402
Section on Chemistry, Materia Medica and Therapeutics 414
A Review of the Metabolism of the Carbohydrates—*I. H. Manning, M. D.* 414
Therapeutic Uses of Aconite and Veratrum Viride—*A. A. Kent, M. D.* 420
Has Alcohol a Place as a Therapeutic Agent?—*G. H. Macon, M. D.* 429
A Study of Chemical Hydrochloric Acid, Especially as to Its Pharmacological Action and Therapeutic Usese—*S. M. Bittinger, M. D.* 434
Some Underlying Principles in Endocrinology—*A. S. Oliver, M. D.* 442
Camphor in Pneumonia and Other Diseases—*D. S. Currie, M. D.* 448
Woman's Auxiliary to the Medical Society of the State of North Carolina 451
Officers for 1926 451
List of Charter Members 452
Roster of Members 453
Minutes of the First Annual Meeting of North Carolina Fellows of American College of Physicians 454
Officers of the American College of Physicians 454
Regents 454
Executive Committee 454
The Association of County Medical Society Presidents of North Carolina 455
Report of the Board of Medical Examiners of the State f North Carolina 456
Examination on Histology, Bacteriology and Pathology—*Dr. C. A. Shore* 459
Examination in Hygiene, Chemistry and Physiology—*Dr. Wm. M. Jones* 460
Examination on Anatomy and Embryology—*Dr. L. A. Crowell* 460
Examination on Surgery—*Dr. L. N. Glenn* 461
Examination on Practice of Medicine—*Dr. Wm. P. Holt* 461
Examination in Materia Medica Therapeutics and Pharmacology—*Dr. J. G. Murphy* 462

PAGE

Examination in Obstetrics, Gynecology and Pediatrics—*Dr. K. P. B. Bonner* 462
North Carolina State Section of the American College of Surgeons 464
Further Observations on Kidney and Bladder Stones with Special Reference to Recurrence—*C. O. DeLaney, M. D.* 464
The Relation of the Surgeon to the Roentgenologist, Pathologist and Follow-Up Record—*G. Carlyle Cooke, M. D.* 470
Radical Operation for Carcinoma of the Breast by Stewart's Incision—*D. T. Tayloe, Jr., M. D.* 476
Report of a Case of Sarcoma of Testicle—*C. M. Strong, M. D.* 481
Bone Tumors—*C. S. Lawrence, M. D.* 483
Report of an Interesting Head Injury Case—*Russell S. Beam, M. D., F. A. C. S.* 490
Some Fundamentals in the Diagnosis and Treatment of Thyroid Diseases—*Foy Roberson, M. D.* 495
The Clinical Significance of Gall Bladder Symptoms—*J. W. Tankersley, M. D., F. A. C. S.* 504
Ruptured Ulcer of the Stomach—*G. B. Crowell, M. D.* 508
Sacral Nerve Block Anesthesia in Surgery and Urology—*J. D. Highsmith, M. D.* 513
The Medical Journal: A Necessary Adjunct to the Surgeon and the Hospital—*James M. Northington, M. D.* 523
Preliminary Considerations in Connection with Provisions of the Duke Foundation for Hospitals—*W. S. Rankin, M. D.* 525
Relations of State Board of Health to North Carolina Hospitals—*J. Howell Way, M. D.* 527
Some Observations on the Intravenous Use of Mercurochrome—*T. V. Goode, M. D.* 532
Some Phases of the Acute Surgical Abdomen—*Numa D. Bitting, M. D., F. A. C. S.* 536
Relation Between Surgeon and Internist—*A. T. Pritchard, M. D.* 539
Crawford W. Long, the Discoverer of Surgical Anaesthesia—*John Wesley Long, M. D.* 542
Constitution and By-Laws of the Medical Society of the State of North Carolina 553
Memoranda 554
Principles of Medical Ethics of the American Medical Association 569
Constitution and By-Laws of the American Medical Association 577
Standing Rules of the House of Delegates of the American Medical Association 596
Some Newer Viewpoints Concerning the Nature and Treatment of Nephritis —*McKim Marriott, M. D.* 599
Alphabetical List of Members of Medical Society with Postoffice Address, 1925 612
Roster of Members for 1925 by Counties 630

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY—FROM ORGANIZATION TO 1804

Date	Place	President	Vice-President	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

*Missing Data Not to Be Found in Records

	Date	Place of Meeting	Number in Attendance	President	Vice-Presidents*	Secretary	Treasurer*	Members on roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	....	....
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	....
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	....
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	....
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	....
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	....
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	....
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	....
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	....
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	....
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	.....	.....
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	....
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	....
13	1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	W. G. Thomas	C. W. Graham	.....	.....	.....
14	1867	Tarboro	41	W. G. Thomas	.....	S. S. Satchwell	C. W. Graham	288	11	....
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	.....	.....
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	.....	.....
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	.....	.....
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	.....	.....
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	.....	.....

20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	.....	....	....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	.....	....	....
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	....
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith	L. J. Picot	A. G. Carr	194	6	....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	....
28	1881	Asheville	92	R. B. Haywood	J. A. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	C. M. Van Poole	438	7	....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	C. M. Van Poole	452	7	....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	M. P. Perry	306	6	....
36	1889	Elizabeth C	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	M. P. Perry	410	6	....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	M. P. Perry	414	6	....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	M. P. Perry	422	6	....
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	M. P. Perry	431	6	....
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1925—Continued

*Missing Data Not to Be Found in Records

	Date	Place of Meeting	Number in Attendance*	President	Vice-Presidents	Secretary	Treasurer	Members on Roll	Honorary Members	Honorary Fellows
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotten, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	Ed. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrove	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville	276	*J. A. Burroughs E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton. J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bulluck, L. B. Morse.	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68

*Died during his term of office; succeeded by E. J. Wood, first vice-president.

63	1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill. J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1,087	11	81
						Secy-Treas.	Acting			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
						Secretary-Treasurer				
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrot, B. C. Nalle, J. R. McCracken.	L. B. McBrayer		1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill, ‡Eugene B. Glenn, D. A. Garrison.	L. B. McBrayer		1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt	L. B. McBrayer		1,657	10	116

‡Died during his term of office.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

JAMES H. DICKSON, Wilmington 1859-1866
CHARLES E. JOHNSON, Raleigh 1859-1866
CALEB WINSLOW, Hertford 1859-1866
OTIS F. MANSON, Townsville 1859-1866
WILLIAM H. McKEE, Raleigh 1859-1866
CHRISTOPHER HAPPOLDT, Morganton 1859-1866
J. GRAHAM TULL, New Bern 1859-1866
SAMUEL T. IREDELL, Secretary 1859-1866

SECOND BOARD

N. J. PITTMAN, Tarboro 1866-1872
E. BURKE HAYWOOD, Raleigh 1866-1872
R. H. WINBORNE, Edenton 1866-1872
S. S. SATCHWELL, Rocky Point 1866-1872
J. J. SUMMERELL, Salisbury 1866-1872
R. B. HAYWOOD, Raleigh 1866-1872
M. WHITEHEAD, Salisbury 1866-1868
J. F. SHAFFNER, Salem 1868-1872
WILLIAM LITTLE, Secretary 1866-1867
THOMAS F. WOOD, Secretary, Wilmington 1867-1872

THIRD BOARD

CHARLES J. O'HAGAN, Greenville 1872-1878
W. A. B. NORCOM, Edenton 1872-1878
C. TATE, Murphy 1872-1878
GEORGE A. FOOTE, Warrenton 1872-1878
J. W. JONES, Tarboro 1872-1878
R. L. PAYNE, Lexington 1872-1878
CHARLES DUFFY, JR., Secretary, New Bern 1872-1878

FOURTH BOARD

PETER E. HINES, Raleigh 1878-1884
THOMAS D. HAIGH, Fayetteville 1878-1884
GEORGE L. KIRBY, Goldsboro 1878-1884
THOMAS F. WOOD, Wilmington 1878-1884
JOSEPH GRAHAM, Charlotte 1878-1884
*ROBERT I. HICKS, Williamston 1878-1880
†RICHARD H. LEWIS, Raleigh 1880-1884
HENRY T. BAHNSON, Secretary, Salem 1878-1884

FIFTH BOARD

WILLIAM R. WOOD, Scotland Neck 1884-1890
AUGUSTUS W. KNOX, Raleigh 1884-1890
FRANCIS DUFFY, New Bern 1884-1890
PATRICK L. MURPHY, Morganton 1884-1890
WILLIS ALSTON, Littleton 1884-1890
J. A. REAGAN, Weaverville 1884-1890
W. J. H. BELLAMY, Secretary, Wilmington 1884-1890

SIXTH AND SEVENTH BOARDS

R. L. PAYNE, JR., Lexington 1890-1892
GEORGE W. PUREFOY, Asheville 1890-1892
GEORGE G. THOMAS, Wilmington 1890-1894
ROBERT S. YOUNG, Concord 1890-1894
WILLIAM H. WHITEHEAD, Rocky Mount 1890-1896
GEORGE W. LONG, Graham 1890-1896
L. J. PICOT, Secretary, Littleton 1890-1896
JULIAN M. BAKER, Tarboro 1892-1898
H. B. WEAVER, Secretary, Asheville 1892-1898
[1]J. M. HAYS, Greensboro 1894-1897
[2]KEMP P. BATTLE, JR., Raleigh 1897-1900

*Resigned before expiration of term.
†Elected for unexpired term of Dr. Hicks.

[1]Died before the expiration of his term.
[2]Elected to serve unexpired term of Dr. Hays.

[1]THOMAS S. BURBANK, Wilmington 1894-1898
[2]WILLIAM H. H. COBB, Goldsboro 1898-1900
[3]RICHARD H. WHITEHEAD, Chapel Hill 1896-1898
[4]J. HOWELL WAY, Secretary, Waynesville 1898-1902
DAVID T. TAYLOE, Washington 1896-1902
THOMAS E. ANDERSON, Secretary, Statesville 1896-1902
[5]ALBERT ANDERSON, Wilson 1898-1902
[5]EDWARD C. REGISTER, Charlotte 1898-1902
[5]THOMAS S. McMULLAN, Hertford 1900-1902
[5]JOHN C. WALTON 1900-1902

EIGHTH BOARD

A. A. KENT, Lenoir 1902-1908
CHARLES O'H. LAUGHINGHOUSE, Greenville 1902-1908
M. H. FLETCHER, Asheville 1902-1908
JAMES M. PARROTT, Kinston 1902-1908
J. T. J. BATTLE, Greensboro 1902-1908
FRANK H. RUSSELL, Wilmington 1902-1908
[6]GEORGE W. PRESSLY, Secretary, Charlotte 1902-1906
[7]G. T. SIKES, Secretary, Grissom 1906-1908

NINTH BOARD

LEWIS B. McBRAYER, Asheville 1908-1914
JOHN C. RODMAN, Washington 1908-1914
WILLIAM W. McKENZIE, Salisbury 1908-1914
HENRY H. DODSON, Greensboro 1908-1914
JOHN BYNUM, Winston-Salem 1908-1914
J. L. NICHOLSON, Richlands 1908-1914
BENJ. K. HAYS, Secretary, Oxford 1908-1914

TENTH BOARD

ISAAC M. TAYLOR, Morganton 1914-1920
JOHN Q. MYERS, Charlotte 1914-1920
JACOB F. HIGHSMITH, Fayetteville 1914-1920
MARTIN L. STEVENS, Asheville 1914-1920
[8]CHARLES T. HARPER, Wilmington 1914-1915
[9]EDWIN G. MOORE, Elm City 1915-1920
[10]JOHN G. BLOUNT, Washington 1914-1920
HUBERT A. ROYSTER, Secretary, Raleigh 1914-1920

ELEVENTH BOARD

LESTER A. CROWELL, Lincolnton 1920-1926
WILLIAM P. HOLT, Duke 1920-1926
J. GERALD MURPHY, Wilmington 1920-1926
LUCIUS N. GLENN, Gastonia 1920-1926
CLARENCE A. SHORE, Raleigh 1920-1926
WILLIAM M. JONES, Greensboro 1920-1926
KEMP P. B. BONNER, Secretary, Morehead City 1920-1926

[1]Resigned before the expiration of his term.

[2]Elected to serve the unexpired term of Dr. Burbank.

[3]Resigned before the expiration of his term.

[4]Elected to serve the unexpired term of Dr. Whitehead.

[5]Elected for short terms expiring in 1902.

[6]Resigned before the expiration of his term.

[7]Elected to serve the unexpired term of Dr. Pressly.

[8]Died before the expiration of his term.

[9]Elected to serve the unexpired term of Dr. Harper.

[10]Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

NOTE: In 1890, the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two legal terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1925

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1893
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	State Society	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1892 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Raleigh	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

MEMBERS STATE BOARD OF HEALTH—Continued

Name	Address	Appointed by	Term
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George E. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M. D.¶	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.*	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.†	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.‡	Asheville	Gov.CameronMorrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1919 to 1925
Chas. E. Waddell, C.E.‡	Asheville	Gov.CameronMorrison	1921 to 1923
J. Howell Way, M.D.	Waynesville	Gov.CameronMorrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov.CameronMorrison	1923 to 1929
James P. Stowe	Charlotte	Gov.CameronMorrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse	Greenville	State Society	1923 to 1929
Cyrus Thompson, M.D.	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S.	Roxboro	Gov. A. W. McLean	1925 to 1931

¶Resigned to become member of General Assembly.
*Died leaving unexpired term.
†Resigned to become Health Officer Vance County.

‡Resigned.

STATE BOARD OF EXAMINERS FOR NURSES

Miss Mary P. Laxton, President ..... Biltmore
Mrs. Z. V. Conyers, Secretary and Treasurer ..... Greensboro
Miss E. A. Kelly ..... Fayetteville
Dr. Oren Moore (from State Medical Society) ..... Charlotte
Dr. R. Duval Jones (from State Hospital Association) ..... New Bern

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1911-1925

County	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Alamance	12	11	11	13	9	10	12	10	15	27	27	31	27	27	25
Alexander *a*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Alleghany	....	....	....	....	2	2	....	....	....	....	....	....	1	....	....
Anson	1	6	8	7	....	....	....	1	3	2	1	2	12	12	11
Ashe	....	....	....	....	....	....	11	15	8	7	5	9	8	6	10
Avery	....	....	....	8	7	9	9	7	6	4	5	4	5	5	5
Beaufort	16	15	14	14	14	14	10	11	10	14	12	14	17	14	17
Bertie	2	2	2	3	3	3	3	5	5	10	9	12	10	9	9
Bladen	4	4	5	7	7	6	9	8	9	8	7	7	4	3	8
Brunswick	2	2	5	4	5	....	....	2	2	2	1	1	1	1	1
Buncombe	63	64	69	68	70	71	74	76	81	83	92	96	99	105	97
Burke	12	11	13	15	17	17	16	17	6	11	12	11	15	13	14
Cabarrus	21	21	19	22	23	25	20	22	19	20	19	21	23	19	21
Caldwell	12	10	12	12	11	7	9	13	12	10	10	12	12	10	11
Camden *b*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carteret	6	7	6	7	7	9	7	4	7	9	9	8	12	10	10
Caswell	1	1	1	1	1	1	1	1	3	2	2	1	1	1	2
Catawba	....	....	....	....	15	13	18	....	5	18	16	22	20	19	16
Chatham	6	....	14	15	12	11	11	11	7	10	11	6	7	9	9
Cherokee	7	9	8	7	10	9	11	10	6	10	10	10	10	9	10
Chowan-Perquimans	7	5	8	9	7	4	3	....	6	8	7	6	7	8	5
Clay *c*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland	14	15	15	16	13	13	16	16	17	19	16	19	18	18	17
Columbus	10	12	12	14	9	11	7	1	6	10	8	9	14	11	12
Craven	12	14	18	15	11	8	11	7	7	6	6	8	10	12	14
Cumberland	20	22	23	22	24	19	17	16	15	20	24	23	22	32	31
Currituck	4	4	4	6	7	6	6	1	5	5	5	5	4	4	4
Dare *d*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Davidson	13	15	13	17	13	9	20	20	19	18	16	18	18	22	20
Davie	5	6	....	....	....	6	5	4	4	4	4	4	6	4	5
Duplin	9	8	9	7	4	7	10	9	9	10	12	11	12	12	13
Durham-Orange	28	31	32	38	40	41	44	35	33	45	40	43	43	47	53
Edgecombe	11	11	11	13	13	13	10	10	7	15	15	15	12	10	11
Forsyth	29	31	32	37	39	42	45	37	37	57	62	60	59	62	63
Franklin	11	11	10	10	12	11	10	11	11	12	10	12	12	12	12
Gaston	29	29	30	27	26	25	27	27	26	35	38	39	40	40	39
Gates	....	....	....	....	....	....	....	....	1	....	....	....	1	1	1
Graham	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Granville	8	13	12	14	11	16	16	14	14	15	14	14	12	13	13
Greene	6	5	5	5	5	6	5	2	5	6	7	7	5	6	5
Guilford	56	58	59	62	71	66	68	67	72	77	78	80	87	93	107
Halifax	2	2	11	11	7	15	8	1	7	28	24	24	18	21	20
Harnett	14	17	17	16	17	15	17	15	14	16	15	16	15	15	13
Haywood	10	11	13	15	11	11	11	9	9	11	10	12	13	13	14
Henderson-Polk	17	17	11	14	14	15	15	11	13	15	13	13	13	13	14
Hertford	2	....	8	10	4	1	5	10	10	10	10	10	10	10	8
Hoke	....	....	....	....	....	....	10	11	10	10	8	6	8	9	11
Hyde	6	6	7	7	....	....	....	1	2	1	1	2	1	2	1
Iredell-Alexander	12	9	9	14	16	9	20	11	11	21	18	20	19	20	26
Jackson	....	....	2	3	5	2	5	2	5	5	6	6	6	8	7
Johnston	19	18	18	19	21	19	22	16	24	22	23	26	25	25	24
Jones	....	....	....	....	....	....	....	....	....	....	....	1	2	1	4
Lee	....	....	7	8	7	8	8	6	8	8	8	10	10	11	13
Lenoir	6	8	9	12	14	15	16	15	17	22	19	20	17	20	18
Lincoln	10	11	12	13	14	11	9	11	15	16	14	13	14	16	11
Macon-Clay	....	....	4	4	5	5	4	6	6	6	7	7	7	7	6
Madison	....	10	7	8	11	9	10	....	11	11	12	8	11	11	11
Martin	13	12	13	14	14	15	17	12	11	16	14	12	13	10	10
McDowell	5	6	6	7	7	7	8	7	6	6	5	5	6	7	8
Mecklenburg	44	50	63	69	71	74	63	49	97	104	107	110	115	109	121
Mitchell	5	5	4	2	2	2	1	....	4	5	8	10	10	7	7
Montgomery	7	7	8	6	10	9	9	8	6	8	11	10	9	9	8
Moore	21	21	13	16	15	18	10	15	16	16	17	21	20	20	19
Nash	....	1	....	19	18	26	27	21	26	25	26	30	30	33	34
New Hanover	21	22	31	28	33	41	30	29	38	40	46	51	46	44	42
Northampton	9	1	12	12	11	10	14	11	13	10	11	11	10	10	10
Onslow	11	10	12	10	8	9	11	7	9	8	7	7	5	6	6
Orange *e*	1	1	8	....	....	....	....	....	....	....	6	....	....	....	....
Pamlico	4	4	5	5	5	5	5	4	4	5	6	5	5	4	5
Pasquotank-Camden-Dare	12	12	13	15	15	17	19	16	15	16	11	19	18	17	18
Pender	2	2	2	....	....	....	....	4	3	1	1	2	2	1	1
Perquimans *f*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Person	10	11	11	8	11	13	12	....	12	10	11	10	10	10	8
Pitt	10	5	9	5	15	9	14	5	18	24	19	24	23	24	26
Polk *g*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Randolph	8	9	7	12	14	11	13	11	12	13	15	14	14	13	14

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

County	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Richmond	1	10	....	10	13	13	14	11	13	12	14	13	14	16	19
Robeson	22	23	35	24	16	22	16	8	31	35	34	33	27	29	30
Rockingham	16	16	18	19	17	10	4	15	16	20	23	25	21	23	26
Rowan	26	24	23	26	22	25	23	22	24	28	31	32	32	36	40
Rutherford	24	18	19	20	19	21	14	17	18	20	12	18	22	21	21
Sampson	11	12	12	14	14	18	15	10	11	13	14	12	13	17	15
Scotland	9	9	11	12	12	12	13	10	9	10	12	12	12	12	12
Stanly	10	11	11	13	14	9	14	11	11	15	12	11	12	15	14
Stokes	10	11	7	12	13	12	10	5	5	10	6	12	9	10	10
Surry	13	14	19	21	19	18	23	24	27	28	25	25	24	26	22
Swain	....	....	....	....	....	....	6	7	2	3	1	4	3	1	1
Transylvania	5	5	6	7	6	7	5	....	1	1	1	5	6	4	8
Tyrrell *h*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Union	15	16	17	16	16	12	13	15	14	16	17	17	18	18	19
Vance	11	11	11	10	11	13	10	4	5	11	11	10	10	12	11
Wake	56	54	41	53	57	62	70	56	81	68	73	76	85	73	78
Warren	4	5	5	5	8	7	7	6	3	8	8	7	7	6	6
Washington-Tyrrell	....	....	....	....	....	....	....	....	....	....	10	9	9	9	8
Watauga	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	....	16	19	13	7	17	19	18	27	28	24	33	32	29	32
Wilkes	11	6	9	8	7	6	9	8	10	10	11	10	10	10	10
Wilson	17	17	17	24	22	22	24	21	25	29	31	28	31	31	32
Yadkin	6	6	7	7	6	....	....	....	10	2	5	4	3	2	3
Yancey	....	....	....	....	....	....	....	....	3	3	1	1	1	1	1
Totals	996	1036	1133	1220	1221	1228	1271	1087	1306	1497	1491	1571	1592	1606	1657

a See Iredell-Alexander; b See Pasquotank-Camden-Dare; c See Macon-Clay; d See Pasquotank-Camden-Dare; e See Durham-Orange; f See Chowan-Perquimans; g See Henderson-Polk; h See Washington-Tyrrell.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adams, M. R. ..... Statesville
Alexander, Annie L. ..... Charlotte
*Alston, B. P. ..... Epsom
Ambler, C. P. ..... Asheville
Anderson, Albert ..... Raleigh
Anderson, Thos. Eli ..... Statesville
*Archey, L. M. ..... Concord
*Asbury, F. E. ..... Ashboro
*Attmore, Geo. S. ..... Stonewall
*Bahnson, H. T. ..... Winston-Salem
Baker, J. M. ..... Tarboro
*Barrier, P. A. ..... Mt. Pleasant
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
Battle, S. W. ..... Charlotte
Beall, Wm. P. ..... Greensboro
*Bellamy, W. J. H. ..... Wilmington
Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
*Booth, Samuel D. ..... Oxford
Brown, J. S. ..... Hendersonville
*Bulluck, D. W. ..... Wilmington
Bynum, John ..... Winston-Salem
*Caldwell, D. G. ..... Concord
*Cheatham, Archibald ..... Durham
*Clark, G. L. ..... Clarkton
Council, J. B. ..... Salisbury
*Covington, J. M. ..... Wadesboro
Cox, E. L. ..... Jacksonville
*Croom, J. D. ..... Maxton
Crowell, A. J. ..... Charlotte
Daligny, Charles ..... Troy
Dalton, David N. ..... Winston-Salem
DeArmon, J. McC. ..... Charlotte
*Denny, Wm. W. ..... Pink Hill
Dillard, Richard, Jr. ..... Edenton
Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
*Duffy, Francis ..... New Bern
Edgerton, Jas. L. ..... Hendersonville
Edwards, G. C. ..... Hookerton
Edwards, J. D. ..... Siler City
Ellis, R. C. ..... Shelby
Faison, I. W. ..... Charlotte
Faison, Wm. W. ..... Goldsboro
*Fletcher, M. H. ..... Asheville
Fox, M. F. ..... Guilford College
*Freeman, Richard A. ..... Burlington
Galloway, W. C. ..... Wilmington
Gibbon, Robert L. ..... Charlotte
Gilmer, Chas. S. ..... Greensboro, R. 6
Goley, Wm. R. ..... Graham
*Goodman, E. G. ..... Lanvale
Goodwin, A. W. ..... Raleigh
Gove, Anna M. ..... Greensboro
*Graham, Joseph ..... Charlotte
Graham, Wm. A. ..... Charlotte
Griffin, J. A. ..... Clayton
*Hall, Wright ..... Wilmington
Halsey, B. F. ..... Roper
*Hargrove, R. H. ..... Robersonville
Harris, F. R. ..... Henderson
*Harris, I. A. ..... Weaverville
Harriss, A. H. ..... Wilmington
*Haywood, F. J. ..... Raleigh
Haywood, Hubert ..... Raleigh
*Hicks, Wm. N. ..... Durham
Highsmith, J. F. ..... Fayetteville
*Hill, L. H. ..... Germanton
Houck, Albert F. ..... Lenoir
*Hudson, Wm. L. ..... Dunn
Hughes, Francis W. ..... New Bern
Hunter, L. W. ..... Charlotte
Ingram, Chas. B. ..... Mt. Gilead
Irwin, J. R. ..... Charlotte
Jenkins, Chas. L. ..... Raleigh
Jewett, Robert D. ..... Wilmington
Johnson, N. M. ..... Durham
Jones, A. G. ..... Walnut Cove
Jones, C. M. ..... Grimesland
Jordan, T. M. ..... Raleigh
Julian, Charles A. ..... Thomasville
*Knight, J. B. H. ..... Williamston
Knox, A. W. ..... Raleigh
Laughinghouse, Chas. O'H., Greenville
Leggett, Kenelm ..... Hobgood
Lewis, Geo. W. ..... Wilson
Lewis, H. W. ..... Jackson
Lewis, R. H. ..... Raleigh
Linville, A. Y. ..... Winston-Salem
Long, Benj. L. ..... Hamilton
*Long, Geo. W. ..... Graham
Long, H. F. ..... Statesville
Long, J. W. ..... Greensboro

*Deceased.

*Love, W. J. ..... Wilmington
*McDonald, A. D. ..... Wilmington
McGeachy, R. S. ..... Kinston
McGee, J. W. ..... Raleigh
*McKay, A. M. ..... Summerville
*McKay, John A. ..... Buies Creek
*McKee, James ..... Raleigh
McKenzie, W. W. ..... Salisbury
McLaughlin, J. E. ..... Statesville
McMillan, Benj. F. ..... Red Springs
*McMillan, J. D. ..... Lumberton
*McMillan, J. L. ..... Red Springs
McMillan, W. D. ..... Wilmington
McNeill, J. W. ..... Fayetteville
*McNeill, Wm. M. ..... Buies Creek
Manning, J. M. ..... Durham
*Miller, J. F. ..... Goldsboro
Misenheimer, C. A. ..... Charlotte
*Misenheimer, Theo. F. ..... Morven
Monroe, W. A. ..... Sanford
Montgomery, John C. ..... Charlotte
Moore, C. E. ..... Wilson
Moore, Edwin G. ..... Elm City
Munroe, J. P. ..... Charlotte
Nelson, R. J. ..... Robersonville
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
Nicholson, Sam T. ..... Washington
Noble, R. J. ..... Selma
Nobles, Jos. E. ..... Greenville
Parrott, J. M. ..... Kinston
*Pate, Wm. T. ..... Gibson
Pemberton, Wm. D. ..... Concord
*Perry, M. P. ..... Macon
*Pharr, T. F. ..... Concord
*Pharr, Wm. W. ..... Charlotte
Phillips, Matthew D. ..... Dalton
*Picot, L. J. ..... Littleton
Pressly, G. W. ..... Charlotte
*Prince, D. M. ..... Laurinburg
*Register, Edw. C. ..... Charlotte
Reynolds, C. V. ..... Asheville
*Ritter, F. W. ..... Moyock
Rodman, J. C. ..... Washington
Royster, H. A. ..... Raleigh
Royster, W. I. ..... Raleigh
Schonwald, J. T. ..... Wilmington
*Shaffner, J. F., Sr. ..... Winston-Salem
Shamburger, J. B. ..... Star
Sikes, G. T. ..... Creedmoor
Smith, J. B. ..... Pilot Mountain
Smith, R. A. ..... Goldsboro
Snipes, E. P. ..... Jonesboro
*Speight, R. H., Sr. ..... Whitakers
Spencer, W. O. ..... Winston-Salem
Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Stevens, M. L. ..... Asheville
Strickland, Edw. F. ..... Bethania
Summerell, E. M. ..... China Grove
Summers, Chas. L. ..... Baltimore, Md. (Forsyth Co.)
Tayloe, D. T. ..... Washington
*Taylor, I. M. ..... Morganton
*Thomas, G. G. ..... Wilmington
Trantham, H. T. ..... Salisbury
Tull, Henry ..... Kinston
Van Poole, C. M. ..... Salisbury
Vestal, W. J. ..... Lexington
*Von Ruck, Karl ..... Asheville
Ward, W. H. ..... Plymouth
Way, J. Howell ..... Waynesville
Weaver, H. B. ..... Asheville
Wharton, L. D. ..... Smithfield
*Whitaker, R. A. ..... Kinston
White, J. W. ..... Wilkesboro
Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
Whitfield, Wm. Cobb ..... Grifton
Whittington, W. P. ..... Asheville
*Williams, J. H. ..... Asheville
Wilson, A. R. ..... Greensboro
*Young, R. S. ..... Concord

*Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany	Baltimore, Md.
W. W. Keen	Philadelphia, Pa.
J. Allison Hodges	Richmond, Va.
*R. L. Payne	Norfolk, Va.
*J. N. McCormack	Bowling Green, Ky.
R. L. Payne, Jr.	Norfolk, Va.
J. L. Ludlow, C. E.	Winston-Salem
Paul V. Anderson	Richmond, Va.
Stuart McGuire	Richmond, Va.
William J. Mayo	Rochester, Minn.
William Seaman Bainbridge	New York, N. Y.
William Sharpe	New York, N. Y.
William McKim Marriott (Elected 1925)	St. Louis, Mo.

*Deceased.

OFFICERS, 1924-1925

President	Dr. Albert Anderson, Raleigh
First Vice-President	Dr. W. L. Dunn, Asheville
Second Vice-President	Dr. A. E. Bell, Mooresville
Third Vice-President	Dr. K. G. Averitt, Cedar Creek
Secretary-Treasurer	Dr. L. B. McBrayer, Southern Pines

OFFICERS, 1925-1926

President	Dr. Wm. deB. MacNider, Chapel Hill
First Vice-President	Dr. J. P. Matheson, Charlotte
Second Vice-President	Dr. W. W. Dawson, Grifton
Third Vice-President	Dr. H. H. Bass, Henderson
Secretary-Treasurer (1924-1927) †	Dr. L. B. McBrayer, Southern Pines

COUNCILORS, 1925-1928

First District—Dr. H. D. Walker	Elizabeth City
Second District—Dr. Grady G. Dixon	Ayden
Third District—Dr. E. J. Wood	Wilmington
Fourth District—Dr. J. C. Grady	Kenly
Fifth District—Dr. J. D. Highsmith	Fayetteville
Sixth District—Dr. V. M. Hicks	Raleigh
Seventh District—Dr. T. C. Bost	Charlotte
Eighth District—Dr. F. R. Taylor	High Point
Ninth District—Dr. M. R. Adams	Statesville
Tenth District—Dr. W. J. Hunnicutt	Asheville

†Again elected in 1925, although term had not expired.

CHAIRMEN OF SECTIONS, 1926

Public Health and Education.....Dr. R. L. Carlton, Winston-Salem
Surgery.....Dr. Foy Roberson, Durham
Eye, Ear, Nose, and Throat.....Dr. O. C. Daniels, Oriental
Gynecology and Obstetrics.....Dr. George H. Ross, Durham
Pediatrics.....Dr. John LaBruce Ward, Asheville
Practice of Medicine.....Dr. M. L. Stevens, Asheville
Chemistry, Materia Medica, and Therapeutics.....Dr. G. H. Macon, Warrenton
Medical Veterans of the World War and Medical Officers Reserve Corps.....Dr. John W. MacConnell, Davidson

DELEGATES

To American Medical Association:
- Dr. M. L. Stevens, Asheville, 1924 and 1925*
- Alternate—Dr. J. Q. Myers, Charlotte
- Dr. W. S. Rankin, Raleigh, 1925 and 1926
- Alternate—Dr. A. J. Crowell, Charlotte

To Medical Society of Virginia:
- Dr. J. B. Ray, Leaksville
- Dr. S. W. Hurdle, Winston-Salem
- Dr. W. S. Smith, Goldsboro
- Dr. John M. Manning, Durham

To South Carolina Medical Association:
- Dr. A. A. Barron, Charlotte
- Dr. J. G. Pate, Gibson
- Dr. Guy E. Dixon, Hendersonville
- Dr. W. C. Mudgett, Southern Pines

To attend Conference on Goiter Prevention**:
- Dr. A. G. Brenizer, Charlotte
- Dr. E. J. Wood, Wilmington

COMMITTEES

Scientific Work***:
- Dr. J. B. Bullitt, Chapel Hill†
- Dr. C. A. Shore, Raleigh
- Dr. E. J. Wood, Wilmington

Memorial for the North Carolina Physicians Who Died in the World War:
- Dr. J. P. Munroe, Chairman, Charlotte
- Dr. A. J. Crowell, Charlotte
- Dr. L. B. McBrayer, Southern Pines
- Dr. J. M. Parrott, Kinston
- Dr. J. T. Burrus, High Point

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*Again elected in 1925, although term had not expired.
**Appointed by President MacNider to attend Conference held at Atlantic City, May 26, 1925, in conjunction with American Medical Association.
***Appointed in 1922 to serve for five years.
†Elected to succeed Dr. Wm. deB. MacNider.

Public Health Administration§
- Pres. State Board of Health, *ex-officio*, Dr. J. Howell Way, Chairman, Waynesville
- Pres. State Board of Medical Examiners, *ex-officio*, Dr. L. N. Glenn, Gastonia
- Pres. North Carolina Hospital Asso., *ex-officio*, Dr. Thomas M. Jordan, Raleigh

Public Policy and Legislation
- Dr. W. A. Monroe, Chairman, Sanford
- Dr. A. A. Kent, Lenoir
- Dr. K. P. B. Bonner, Morehead City

Finance
- Dr. G. T. Sikes, Chairman, Creedmoor
- Dr. L. P. Williams, Edenton
- Dr. D. W. Holt, Greensboro

Obituaries
- Dr. E. G. Moore, Chairman, Elm City
- Dr. J. T. J. Battle, Greensboro
- Dr. W. M. Coppridge, Durham

Journal, "Southern Medicine and Surgery"
- Dr. Chas. O'H Laughinghouse, Chairman Greenville
- Dr. C. V. Reynolds, Asheville
- Dr. C. A. Shore, Raleigh

Wake County Controversy
- Dr. J. M. Parrott, Chairman, Kinston
- Dr. J. G. Murphy, Wilmington
- Dr. Foy Roberson, Durham
- Dr. John Wesley Long, Greensboro
- Dr. A. J. Crowell, Charlotte

Symposium (Eye, Ear, Nose, and Throat Section)
- Dr. O. C. Daniels (Chairman of Section), Chairman ex officio, Oriental
- Dr. Jos. B. Greene, Asheville
- Dr. C. W. Banner, Greensboro
- Dr. R. S. Beam, Lumberton

To Co-operate with Committee from the State Board of Medical Examiners and to consider desirability and feasibility of securing a Whole-Time Secretary for the Society*
- Dr. J. Howell Way, Chairman, Waynesville
- Dr. A. A. Kent, Lenoir
- Dr. Hubert A. Royster, Raleigh

§Continuing committee.

*Committee authorized at the last general meeting of the 1925 session, to co-operate with a committee from the State Board of Medical Examiners, looking toward securing a whole-time secretary for the Board of Examiners, whose duty, among other things, will be to see that the laws in regard to the practice of medicine are enforced in the State, and toward the securing of such legislation in connection therewith as may be considered wise. The House of Delegates also authorized the appointment of a committee to investigate the desirability and feasibility of securing a whole-time secretary for the society, and the president referred that matter to this committee.

Tonsil-Adenoid Clinics	Dr. V. M. Hicks, Raleigh, Chairman Dr. J. P. Matheson, Charlotte Dr. R. L. Daniels, New Bern
Package Libraries for Physicians†	Dr. Foy Roberson, Durham Dr. J. Howell Way, Waynesville Dr. Wm. deB. MacNider, Chapel Hill
Arrangements	Dr. J. G. Murphy, Chairman, Wilmington
Place of Meeting, 1926	Wilmington

†To serve for two years.

PROGRAM

GENERAL SESSIONS

TUESDAY, APRIL 28, 9:30 A. M.

Ball Room

OPENING EXERCISES

Call to Order—Dr. W. C. Mudgett, Chairman Committee on Arrangements, Southern Pines.

Invocation—Rev. T. A. Cheatham, D. D., Pinehurst.

President's Address—Dr. Albert Anderson, Raleigh.

Announcements:

(a) Chairman Committee on Arrangements.

(b) Secretary.

TUESDAY, APRIL 28, 2:00 P. M.

Ball Room

MEETING OF HOUSE OF DELEGATES

TUESDAY, APRIL 28, 8:00 P. M.

Ball Room

Address—Dr. William McKim Marriott, St. Louis, Mo.

Address—Dr. Olin West, Secretary and General Manager, American Medical Association, Chicago, Ill.

WEDNESDAY, APRIL 29, 12:00 M.

Ball Room

Conjoint Session of the State Board of Health and the Medical Society of the State of North Carolina (Dr. J. Howell Way, President of the State Board of Health, presiding).

Report of work accomplished and recommendations.

Discussions.

New Business.

WEDNESDAY, APRIL 29, 2:00 P. M.

Ball Room

MEETING OF HOUSE OF DELEGATES

WEDNESDAY, APRIL 29, 8:00 P. M.

Ladies' Card Room

1. Report of the Committee on Obituaries: Dr. Kemp P. Neal, Raleigh, Chairman; Dr. C. F. Strosnider, Goldsboro; Dr. F. L. Siler,* Franklin.

2. "Things Medical Pressing for Solution at this Time": Dr. K. P. B. Bonner, Secretary, State Board of Medical Examiners, Morehead City.

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*Died during year.

3. Report of the House of Delegates.
4. Resolutions.
5. Miscellaneous business.
6. Installation of officers.

Adjournment sine die.

SECTION MEETINGS

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS

TUESDAY, APRIL 28, 10:30 A. M.

Ball Room

Dr. Henry L. Cook, Chairman, Fayetteville

1. Therapeutics of Aconite and Veratrum Viride: Dr. A. A. Kent, Lenoir.
2. A Review of Carbohydrate Metabolism: Dr. I. H. Manning, Chapel Hill.
3. Has Alcohol a Place as a Therapeutic Agent?: Dr. G. H. Macon, Warrenton.
4. The Insanitary Gut and Some Other Things: Dr. H. D. Stewart, Monroe.
5. Some Fundamentals in Endocrinology: Dr. A. S. Oliver, Benson.
6. Pituitrin: Dr. K. G. Averitt, Cedar Creek.
7. The Action of Camphor in Pneumonia and Other Diseases: Dr. D. S. Currie, Parkton.
8. A Study of Hydrochloric Acid, Especially as to its Pharmacologic and Therapeutic Uses: Dr. S. M. Bittinger, Sanatorium.

SECTION ON PUBLIC HEALTH AND EDUCATION

Ladies' Card Room

Dr. L. Jack Smith, Chairman, Wilson

1. Chairman's Address—The Importance of More Careful Diagnosis and Treatment of Minor Illnesses: Dr. L. Jack Smith, Wilson.
2. The Value of Observation and Experience as Applied to the Art of Living: Dr. Cyrus Thompson, Jacksonville.
3. Diphtheria Control by the Use of Schick Test and Toxin-Antitoxin: Dr. C. W. Armstrong, Salisbury.
4. Handicapped Children: Dr. M. L. Townsend, Raleigh.
5. The Control of the Practice of Midwifery: Dr. John W. Williams, Washington.
6. Some New Ideas Concerning the Medical Inspection of School Children: Dr. W. S. Rankin, Raleigh.
7. The Increase of Mental Diseases; The Cause and Prevention: Dr. Paul V. Anderson, Richmond, Va. (Honorary member.)

SECTION ON PEDIATRICS

TUESDAY, APRIL 28, 10:30 A. M.

Men's Card Room

Dr. Leroy J. Butler, Chairman, Winston-Salem

1. Chairman's Address—Some Aspects of Rickets: Dr. Leroy J. Butler, Winston-Salem.
2. Protein Milk in Infant Feeding: Dr. A. McR. Crouch, Wilmington.
3. Anemias in Infancy and Childhood: Dr. Charles R. Bugg, Releigh.
4. The Practical Application of Hydrotherapy: Dr. John LaBruce Ward, Asheville.

5. Intravenous Use of Mercurochrome in the Treatment of Some of the Infectious Diseases of Children; Report of Cases: Dr. Tom M. Watson, Wilmington.

6. The Abnormally Breast-Fed Infant: Dr. Charles P. Mangum, Kinston.

SECTION ON PRACTICE OF MEDICINE

TUESDAY, APRIL 28, 2:00 P. M.

WEDNESDAY, APRIL 29, 9:00 A. M.

Ladies' Card Room

Dr. Frederick R. Taylor, Chairman, High Point

1. Chairman's Address—On the Teaching Function of the Medical Profession as a Whole: Dr. Frederick R. Taylor, High Point.

2. The Treatment of Pyelitis from the General Practitioner's Point of View: Dr. K. C. Moore, Wilson.

3. Health Problems in a Woman's College: Dr. Anna M. Gove, Greensboro.

4. Eczematoid Ringworm of the Hands and Feet: Dr. J. A. Elliott, Charlotte.

5. University Extension Work in Medicine: H. W. Chase, Ph. D., LL. D., President University of North Carolina, Chapel Hill.

Discussion by Mr. Chester D. Snell, Director of the Extension Division, University of North Carolina, Chapel Hill.

6. A Suggestion for a Plan to Replace Physicians in Rural Sections of North Carolina: Dr. W. C. Bostic, Forest City.

7. On the Purpose and Duties of the Section of Medicine; How Can We Best Fulfill Them?: Dr. Charles L. Minor, Asheville.

8. A Further Study of the Possible Relationship of the Monilia Psilosis to Sprue and Pernicious Anemia: Dr. Edward Jenner Wood, Wilmington.

9. Obscure Fevers: Dr. F. M. Hanes, Winston-Salem.

10. Early Clinical Observations with the Coolidge Water-Cooled Tube in Deep Therapy: Dr. J. Rush Shull, Charlotte.

11. Pulmonary Syphilis: Dr. P. P. McCain, Sanatorium.

SECTION ON SURGERY

TUESDAY, APRIL 28, 2:00 P. M.

Men's Card Room

Dr. H. H. Bass, Chairman, Henderson

1. Chairman's Address—Prostatism and its Treatment with Radium and X-ray (Lantern Slides): Dr. H. H. Bass, Henderson.

2. A Discussion of Urinary Extravasation: Dr. Claude B. Squires and Dr. Hamilton W. McKay, Charlotte.

3. X-Ray and Radium Therapy of Uterine Bleeding from Non-Malignant Causes: Dr. C. C. Phillips, Charlotte.

4. Appendicitis in Children, with Special Reference to Drainage: Dr. B. C. Willis, Rocky Mount.

5. Some Points in the Differential Diagnosis of Abdominal Conditions: Dr. John P. Kennedy, Charlotte.

6. Ethylene Oxygen Anesthesia: Dr. Roscoe L. Wall, Winston-Salem.

7. Tetanus: Dr. H. H. Purington, Durham.

Discussion by Dr. Foy Roberson, Durham.

SECTION ON EYE, EAR, NOSE, AND THROAT

WEDNESDAY, APRIL 29, 9:00 A. M. AND 2:00 P. M.

Men's Card Room

Dr. Henry L. Sloan, Chairman, Charlotte

Dr. R. V. Brawley, Secretary, Salisbury

1. Chairman's Address—Safeguards to Cataract Extractions: Dr. Henry L. Sloan, Charlotte.

2. Description of a Radical Frontal Sinus Operation, with Lantern Slides Showing Some Interesting Foreign Body and Sinus Cases: Dr. John B. Wright, Raleigh.

3. Simple Mastoid with Sinus Thrombosis and Brain Abscess as Complications: Dr. Harry C. Willis, Wilson.

4. Mixed Obstructive and Perceptive Unilateral Deafness: Dr. M. R. Gibson, Raleigh.

5. When to Open a Child's Ear Drum: Dr. John Hill Tucker, Charlotte.

6. Indications for Tonsillectomy: Dr. Joseph B. Greene, Asheville.

7. The Use of Morphin-Scopolamin Anesthesia in Ophthalmic Surgery: Dr. J. Y. Malone, Asheville.

8. Tobacco and Lesions of the Eighth Nerve; Case Reports: Dr. V. K. Hart, Statesville.

9. The Eye and Focal Infections: Dr. Hiram Woods, Baltimore, Md. (Guest of the Section.)

10. Personal Experience with Focal Infections: Dr. V. M. Hicks, Raleigh.

SECTION ON GYNECOLOGY AND OBSTETRICS

WEDNESDAY, APRIL 29, 9:00 A. M.

Ball Room

Dr. Brodie C. Nalle, Chairman, Charlotte

1. Chairman's Address—Treatment of Eclampsia: Dr. Brodie C. Nalle, Charlotte.

2. Better Obstetrics; How to Obtain it: Dr. George H. Ross, East Durham.

3. Ectopic Pregnancy: Dr. J. W. McGehee, Reidsville.

4. The Hypodermic and Colonic Instillation and Algesia in Childbirth: Dr. C. L. Sherrill, Statesville.

5. Pyelitis in Pregnancy: Dr. Robert L. Felts, Durham.

6. Fibroids Complicating Pregnancy: Dr. Oren Moore, Charlotte.

7. Treatment of Occiput Posterior: Dr. C. H. C. Mills, Charlotte.

8. When and Why to Remove the Cervix During Hysterectomy for Benign Disease of the Uterus: Dr. R. L. Pittman, Fayetteville.

9. Sterility, and Demonstration of Simplified Apparatus for Testing Patency of Fallopian Tubes: Dr. Robert T. Ferguson, Charlotte.

MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS' RESERVE CORPS*

WEDNESDAY, APRIL 29, 2:00 P. M.

Ladies' Card Room

Col. W. L. Dunn, Chairman, Asheville

1. Chairman's Address—The Medical Regiment: Col. W. L. Dunn, Asheville.

2. Psychoneuroses in Relation to Military Service: Dr. M. Osnato, Professor of Neurology, Post-graduate Medical School, New York. (By invitation.)

3. Heart Irregularity in Relation to Military Service; Lantern Slides: Major Thompson Fraser, Asheville.

4. British and United States Evacuation Contrasted: Lieut. Col. W. P. Herbert, Asheville.

5. Importance of X-Ray in Gastro-intestinal Disorders in Soldiers: Lieut. Col. John D. MacRae, Asheville.

6. The Medical Reserve Officers' Training Corps; A Factor in the Solution of the Medical Economic Situation: Col. Jos. Howell Way, Waynesville.

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*Note—The Surgeon General has been requested to detail Major Glenn I. Jones, M. C., U. S. A., to attend this meeting and give a special talk upon the Medical Officers' Reserve Corps.

TRANSACTIONS

OF THE

SEVENTY-SECOND ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

GENERAL SESSIONS

OPENING EXERCISES

TUESDAY MORNING, APRIL 28, 1925

DR. W. C. MUDGETT, Southern Pines, Chairman of the Committee on Arrangements:

The Seventy-Second Annual Session of the Medical Society of the State of North Carolina will come to order.

If there are any ex-Presidents of the Society in the audience, will they please come to the rostrum?

The Reverend Mr. Serl will pronounce the invocation.

INVOCATION

REV. ELMER W. SERL, Southern Pines:

Our Father, we thank Thee this morning for Thy kindness to us; for Thy loving care and protection; for this day with its opportunities for thought and for service. We pray that we may be made large enough of heart and soul to meet all of those opportunities that come to us, and we know there is no other so enlarging power in life as Thy spirit and influence.

We thank Thee this morning, too, our Father, for the fact that a long time ago Thou wert revealed to the world as the Great Physician of the mind, of the body, of the soul. We pray Thee that we may catch something of the vision that He had who came revealing Thyself to men, that our lives may be lives of service and that we may consider each other as the recipients of good will and favor. And we thank Thee, Father, too, that as we learn how to live together we are learning that some of the things we have perhaps slighted are some of the greatest things; that our daily work, our fellowship, our confidence in each other, all make for happy and successful living.

Do Thou be with those who are gathered here in this session this morning, and in the subsequent sessions, and grant to those who come to these meetings, we pray Thee, that disinterestedness of heart and mind, and that desire to learn and to do and to share, that shall make Thy kingdom a more real experience in the lives

of men and women everywhere, even as they may be benefited physically or mentally. And grant, we pray Thee, our Father, that we may realize that the largest benefit comes to us as the entire man is ministered to. Be with each one, then, that may have some part in the enlargement of life and thought during these days in this session. We ask this in the name of our Christ, Amen.

CHAIRMAN MUDGETT:

Owing to the express wish of the President of our Society, the Committee on Arrangements has done away with the addresses of welcome, of which we could have had several. We have some very able orators here, and I feel that they have been badly hurt and that probably you are missing a great deal in not hearing from them. But in observance of the wishes of the President, we will hold them in leash till some other time.

The next thing on the program will be the Address of the President, and I take pleasure in presenting Dr. Albert Anderson, President of the Medical Society of the State of North Carolina. (Applause.)

PRESIDENT'S ADDRESS

INTENSIVE PROFESSIONAL SERVICE

ALBERT ANDERSON, M. D., SUPERINTENDENT STATE HOSPITAL, RALEIGH

When a boy I loved to look out upon a field perfectly cultivated for planting—the perfect cultivation consisting in subsoiling with the best two-horse plows; then cutting to pieces with a cut-a-way harrow to a criss-cross smoothness, and then finally finishing with a fine tooth harrow. This portrayed or symbolized to my mind the foundation or possibility of a wonderful crop for food or money. The degree of soil fertility by nature or artificially applied produced the degree of pleasure of seeing the developing growth or growing development to complete maturity ready for harvest. So, likewise, when I was elected President of your Society, a year ago, an honor for which I wish now to express my deep and sincere appreciation, I lifted my eyes and looked to the East, to the Piedmont, and to the West, and humbly asked "Whence cometh my strength for this task to be leader?" According to our By-laws, Chapter 6, Section 1, stating the duties of officers, "He shall be the real head of the profession of the State, and during his term of office and as far as practicable shall visit by appointment the various sections of the State and assist the Councilors in building up County Societies and in making their work more practical and useful." In Article 2 of the Constitution we find: "The purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State of North Carolina and to unite with similar organizations in other states to form the American Medical Association; with a view to the extension of medical knowledge and to the advancement of medical science; to the elevation of the standard

of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interest; and to the enlightment and direction of public opinion in regard to the great problems of State medicine; so that the profession shall become capable and honorable within itself and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life."

In 1903 I was present at our meeting in Hot Springs and voted for our Medical Society to go into this federation to form with other state societies the American Medical Association. At that meeting I was also appointed Councilor of the Fourth District. So I came to this task not entirely ignorant of what the President, as leader of our profession, should do. I have given part of my time and ability to promoting the interest of our Society, in coöperation with the ten Councilors of the State.

The medical field in North Carolina is not cultivated and prepared like the agricultural one described above. I have gone into every section of the State and into all the districts except one and into many counties during the year. The district meetings outrank, in every way, those of the county. In order to produce the best possible State Society, the component county societies should be sound to the core, the internal fires should be kept burning. To keep the units alive and at work, the councilor must function efficiently and officially.

I have received reports from every councilor in the State. Some districts have been covered and cultivated faithfully; others have not, on account of insuperable difficulties, I understand.

We have an organization that can succeed. We are in a federation that heads up into the largest medical association in the world. If every basal unit would function normally, at its best, the entire organization would surpass our greatest flight of imagination in its superlative power in giving health, longevity and happiness to the world. Can it be done? Yes. Will it be done in North Carolina? The answer depends on the services of the leaders of the county medical societies in North Carolina. How can this service be secured? In my opinion it can be done by finding and putting into the field a whole-time executive secretary, either from our ranks or from the ranks of the laymen. No great work can be done in a desultory way—even in material things. The man, the group, organism or organization, to live and grow must have organs to function normally and a head to direct.

The county medical societies that are living up to the purposes outlined in our By-laws and Constitution can be counted on the fingers of one hand. How are we going to elevate and make effective the opinions of the profession in all scientific, legislative, public health, medical and social affairs to the end that the profession may receive that respect and support within its own ranks and from the community to which its honorable history and great achievements entitle it? Only by carrying out the purposes incorporated in your

County Constitution as contained in the above question, and to carry on a thing means service continuous, uninterrupted, like that given to a healthy human body by the heart, lungs, kidneys, etc. We have provisions in our federal organization, if utilized, that will give maximum results in the production of health and happiness. Plans and purposes that are not put into use will never get us anywhere. Our federation must operate. Services, intelligent, continuous, faithful, applied to any development of human society will bring success.

The hour has come in North Carolina for our profession to begin an immediate and energetic movement to get ready for the great opportunity just ahead in giving the most effective professional service to our people. To get ready for a great work, a great life, we must educate our doctors to the importance of throwing themselves whole-heartedly into organized medicine. To this end, I urgently recommend a whole-time secretary whose work shall be executive—one with the enthusiasm of a flaming evangel to go over North Carolina, into every county of the State, to help the county units organize and adopt programs calling for real work that will inject the finest altruistic spirit of progress in every department of our work. What can this secretary do? He can give information about the post-graduate medical extension work which our University is giving and about which we shall have more information at this meeting; also the sending out of package libraries—two sources of education invaluable to every doctor who will use them, practically at little cost. Our minds must be stirred by impact and contact with agencies promoted by an executive secretary, some of which I wish to notice briefly.

To sell the National and State Society to every member of the County Society in the State. To do this he will have to go from county to county and let the doctors know all about the meaning of organized medicine. Inspire them with some of the old time principles that there is strength in unity; protection in group action from the wolves that would destroy us. This federation we are living and working in means life, and our business is to make it abundant and abounding life. Let this executive officer be the channel through which our headquarters in Chicago can make contact.

As I stood in the National Home Building of our federation last summer, and went from one department to another, I could see how these departments were like brain centers, capable and ready to react to any call from the medical body, even down to the last unit of the 3,000 county units in the United States. If you wanted to know about the various tricks, chicanery and literary advertisements of quacks and cults, of all the humbuggery that was ever born in crooked brains to filch money from innocent sick, you could get all the information necessary to give out to your clientele to save and protect them. Our Secretary could be a transmission station in North Carolina to put these things over to all the members in every county in the State. This information is food that ought to be

assimilated and converted into blood, circulating and feeding every individual county member as every cell in the body is nourished.

There are only two ways for every profession or individual to go—the right and the wrong way. We want, because we need, a man whose business it is to show us the way and urge us to go therein till we catch the habit. Indifference and indolence, characteristic of too many of us, beget the habit in a man "who sees a way that seemeth right to him, but the ends thereof are the ways of death." Bring on your package libraries, extension courses, study clubs, and use them as you do bread and meat. Let your minds feed and fatten on these things, scientific and eternal, and then you will be able to keep off death, when possible; prolong life, and lower your mortality rate till we can honestly claim to lead in all the forty-eight states, and make our goal the leadership of the world in these immortal things.

In round numbers we have 146,000 physicians in the United States. 90,000 are members in the 3,000 county societies, and about 55,000 are fellows of the American Medical Association. 40,000 do not know the meaning of fellowship, as they are connected by subscription to various publications of our National Headquarters in Chicago. We need acquaintance with the councils, bureaus, publications, laboratories, directors, and full-time executives in our national home. How can these 40,000 understand what all these things stand for when they are detached in this way? Our executive secretary could make attachment to many a one in North Carolina that could be made alive to these great achievements.

Prior to 1903 we had no sections in our annual meetings. Sections divide our members into groups. They have advantages and disadvantages. Personally, I prefer just the number of papers that can be properly read and discussed in a two-day session by the entire body. In this way we get acquainted with the personnel of our members, and, what is more important, learn something of every phase of our medical problem.

Surgeons ought to be doctors—know more of medicines and their actions—of mental and nervous diseases and their symptoms as expressed in behavior. So with the general practitioner. He ought to know more about the indications for surgery, as well as have a better understanding of the behavior of the mental cases. Listen and remember the following: "Palpitation does not mean that the heart is not sound; it may mean that emotions are strongly stirred. Fainting may have a similar significance and may bring welcome attention. Vomiting may not be due to indiscretion of diet, nor to local irritation; it may be an expression of deeply felt disgust. Headache may be caused by various organic conditions, but it may also develop where one has a disagreeable task to face or an embarrassing situation to digest. However, the symptoms arise, they are apt to be woven into the life of the patient; they furnish a most potent weapon with which to dominate the whole group. To many, chronic invalidism is a most important aid in adapting themselves to the difficulties of life, and any attempt to

remove the invalidism meets with sturdy, if concealed, antagonism. These are disorders of personal adaptation masquerading as physical ailments.'' If the surgeon does not recognize this type of patient, his first operation starts a series of major and minor operations that cover a life-time, leaving the patient a cripple in body, mind and soul, as the following cases illustrate. Two—male and female—make their own statements. First the woman states, ''Why I became a drug addict,'' and the man says, ''I was considered incurable.''

The Woman's Statement

''Why I Became a Drug Addict''

Many times since I have been here have I heard this subject discussed, and I wonder if any of us tell the real unvarnished truth —hence the reason I am writing ''Why I became a drug addict.''

Many are the causes that play important parts in my ''Comedy of Errors,'' (for truly there have been some amusing incidents, as well as tragic). First I will say pain that the surgeon's knife alone can relieve; next an indulgent mother, a sympathizing physician; and last, but by no means least, an unhappy marriage, made in my youth.

Until I was fifteen years old I lived a happy careful life, enjoying good health and the luxuries of life, made possible by a very indulgent step-father.

At school in Virginia, in 1909, I was injured on the basketball ground—not seriously. My mother came immediately from Texas, bringing with her a very famous surgeon. I was feeling all right, but from the moment of her arrival I grew ''worse'' (?) for did I not have the entire school, as well as the faculty, to impress with the seriousness of my case, as well as its importance? I took my first hypodermic of morphia. No! I have not been a drug addict that long—it was only the starting, like the pebble in the Alps—only a small stone at the top of the mountain, but an avalanche before it reaches the bottom.

After my marriage I had one operation after another, totaling twelve majors and three minors to date. I sought relief in various forms other than surgery and morphia; consulting the best specialists in the United States, always returning, however, to my home and the surgeon who had known me from childhood for all my operations save three. Yes, he gave me morphia—conscientiously so, for he knew all too well that a breaking heart is harder to heal than surgical wounds. Do not think I mean to imply I have not suffered, for I have, untold physical agony. During this period I was thrown out on the world to make my own way. Knowing the balm that the drug would bring, I am frank to admit, with a weak body, pain tortured, I resorted to it. I also knew the insidiousness of it. Still at that time, taking it from my viewpoint, what else could I do? My work had to be faced with a smile.

Unfortunately, a few years ago I came into possession of some money. As this article, as I stated in the beginning, is to be the

plain unvarnished truth, I will be truthful. I had suffered; I had worked when it seemed impossible to make the effort. I had enough money to have kept me comfortable the rest of my natural life had I been even discreet in its expenditure, but I longed for ease, rest, peace and *forgetfulness of the past.* So I decided to have them at any cost if money could buy them, but those things money does not buy. But alas! morphia could bring at least ease and forgetfulness. I did not go to "boot-leggers" or unethical doctors; instead I placed myself in a hospital of good standing and got one of the best physicians in the "Good Old North State" (were I to mention his name, there would be several exclamations of surprise) to take my case, giving my special nurses P. R. N. orders on morphine. *I got it* for an indefinite length of time.

I shall not go into minor details, as they would be uninteresting, but after the above episode I was compelled to have another operation, and it took an unusual amount of morphine to give me even nominal ease. 'Twas then the doctor said I was a "doper." Others might have known it, others thought it, but it was never expressed before.

I always got my "medicine" from high standing men in the profession. It was easy, for I had letters from specialists saying it was required. I never obtained *one* tablet illegally; very few doses were self administered; I never took any substitutes; never drank any liquor, but did smoke cigarettes to excess. I quit the "drug habit," alone of my own free will and accord, for I realized my pain then was only a "drug pain" and I could not be normal and take it. I fought my fight alone and won.

These are only roughly sketched incidents that landed me in Dix Hill State Hospital, Raleigh, N. C., January 8, 1925, after I'd been off the drug several months.

In closing, I'd like to say that to date I have been here eighty-three days and, had I the vocabulary of Webster, I could not half express my gratitude to those connected with the institution for all that they have done for me, nor could the gold of Midas half repay the many benefits derived.

Not being given the fulsome flattery, I fear I have failed to impress on those in charge my true feelings. So I take this method to express to Dr. Ashby my thanks for his professional care and solicitude in my welfare.

To Miss Cooke, the capable and efficient charge nurse of the Receiving Building, whose amiable manner and bright smile change gloom to sunshine in all with whom she comes in contact, I want to say "I thank you," for life indeed has been made sweeter for having passed her way. To her entire corps of nurses I wish to say I want to thank each and every one for the acts of kindness shown me.

For the State Hospital I shall always have words of praise.

The Man's Statement

"I Was Considered Incurable"

Narcotic drug addiction has become so prevalent in the United States that it is gratifying to know that an organized campaign conducted by this Government and the medical profession is having its effect in curtailing the traffic in drugs, illegal and so-called legal dispensing.

No person may be considered safe from drug addiction. Some years ago drug addicts were confined chiefly to the larger cities, and were frequenters of the underworld. This era in drug addiction has now passed and we find persons in all walks and professions of life enslaved by the drug evil.

Federal Narcotic Statistics report one million users of drugs, or about one per cent of the population of this country. Among this number we find legislators, educators, physicians, ministers of the Gospel, together with persons frequenting the underworld in the larger cities.

Narcotic addiction at one time was confined chiefly to those persons found in the crime centers of large cities. This is not true now, however, as almost every town and hamlet has some person addicted to the use of narcotics.

These persons are rather to be pitied than censured, as their condition has, many times, been brought about through illness, and the administration of morphine by their family physician.

These persons need treatment for their addiction, and the time is past when any reputable doctor may refuse to treat such cases for the reason that records show the drug addict has not responded properly to treatment, and many times the physician has been forced to consider addicts, in general, hopeless cases.

Many so-called treatments in private institutions have failed because they were only commercial in aim, and very little personal interest in the patient was demonstrated.

To illustrate the statement above, take the case of a young man, a Canadian by birth, and a graduate of Toronto University, Toronto, Canada. This man chose the ministry as his profession, marrying a young lady who was also a Christian worker, and very soon after his marriage moved to the South to take up pastoral work.

During the fifth year of his ministry he was stricken with an attack of inflammatory rheumatism, and entered a private sanatorium for treatment. His condition grew worse and necessitated his remaining in this hospital over a period of twenty-three months. Complications arose in his condition which baffled his physicians, and to relieve his suffering morphine was administered hypodermically during the entire time he remained in the hospital.

Upon being discharged he discovered this added affliction, namely, morphine addiction.

In securing his supply of morphine, he was taught to believe that his condition was such that morphine was necessary for him to

live, several prominent physicians telling him that the morphine could not be withdrawn without dire result.

Notwithstanding this advice, he entered private institutions six different times for treatment for this habit, but each time failed to get the relief sought. Each time there was failure to withdraw the drug entirely, or he was told that treatment was useless and again put back on the drug.

This patient was admitted to the inebriate department of the State Hospital at Raleigh for treatment, and given a tentative reduction treatment. He responded at once to this treatment and the drug was entirely withdrawn twelve days after his admission to this institution.

He stated that he suffered less during the entire period than during any one day under previous treatments. The usual symptoms following withdrawal of the drug were not manifested, and the patient immediately began to improve physically, increasing in weight rapidly.

This patient is now well on the way to complete recovery, and deliverance from his addiction.

The best service always has to be the best directed, and direction comes from the mind, the mental process. Therefore, in making the mind hygienic, you are putting first things first—laying your foundations sure and steadfast.

The Mental Hygiene Movement, counting in terms of history, is new. When you speak of it to doctors, they mentally ask the question: "What is Mental Hygiene?" It is only one of the divisions of Hygiene we have heard so much about in the last few years as applied to the body, industry, community, society, etc. Let us get this well fixed in our minds by definition. Hygiene is the "promotion and preservation of health." "Health is that condition of a living organism and its functions which conduces to efficient and prolonged life." Life, says Herbert Spencer, is continuous adjustment of internal relations to external relations. Abbott of Boston summarizes these definitions by saying that "Hygiene is the promotion and preservation of that condition of the organism which enables it to adjust itself efficiently and continuously to its changing environments." But definitions of hygiene, health and life give only a comprehensive basis at which we are aiming. Heretofore we have considered mental life a mystery and it was taken as a matter of course, but now we are considering it more critically, and our aim is to develop symmetrically the intellect and the emotions, for leaders must have both in the right proportion. Strong intellects with childish emotions make failures in life, and large emotional life with childish intellect make the feeble-minded. It is all-important to be born well, developed well, to keep well, to act well, but we are not sure of making a success of mental life unless we can have an environment under conditions which can be made favorable to produce strong personalities. Mental hygiene is a science, an art, and a movement that has to do with the mind before conception, during gestation, and from birth to death, in the preser-

vation and use of the mind. The movement was organized and promoted by a layman, Clifford W. Beers, of Connecticut, and the work was begun in 1912. Our profession has recognized no invincible foe in physical diseases. Shall we do less in mental sickness?

The war acted as a chemical precipitant and brought the mental factor into notice. Over 72,000 men were rejected for mental and nervous diseases from the draft army. One out of every three disabled ex-soldiers is a neuro-psychopathic patient. Today there are thousands of soldiers who served in the late war and whose emotional lives were profoundly affected, who have not received and never will receive a dispensary treatment. Patients in mental hospitals nearly, if not almost, equal those in all other hospitals combined.

Fifty-eight per cent of the suicides are caused by mental or nervous disorders, according to Massachusetts statistics. 40,000 feeble-minded children in the United States are in public institutions, taken from the two per cent of the school children who are not able to carry on the work of the lower grades. One-third of the crimes are committed by the feeble-minded, who also cause much minor delinquency and the continued existence of many other social problems—such as domestic troubles from the drink and drug habits. What are we going to do about it? As we have done in our campaign crusades against tuberculosis, malaria, typhoid, diphtheria. These campaigns have had wonderful results, seen and known of all men. But when we invite you to make a similar crusade against mental diseases, the heroes in the physical field throw up their hands and raise the white flag. Be not a pessimist that sees disaster in every opportunity, but an optimist that sees opportunity in every disaster. Organize for the fight and use the organization. "The longer organized efforts to deal with mental disorders are deferred, the greater will be the problem and the more securely intrenched the enemies to be dislodged."

Prevention must go hand in hand with treatment. Popular education as to the preventable causes of mental disorders, coupled with improvements in standards of care and treatment, must be established. The conduct of thousands of the mentally sick puts them into hospitals by the way of police stations and the courts. Some of this ought to be and can be prevented in early childhood, but our medical colleges are not yet giving the necessary instructions to doctors how to recognize, much less prevent, this class of mental disorders in childhood. Mental health can be bought, as well as physical health. It has taken money and organized efforts in a joint movement by the Nation and State to do what has been done to prevent physical diseases. The same procedure must be adopted for the prevention of mental disorders.

There must be some radical changes in regard to the mental attitude of our people to State hospitals. People now think that it is a disgrace to be mentally sick. That stigma has to be removed. Institutions must be hospitalized. Asylums must be done away with. All universities and medical schools and hospitals must give

public mental hygiene clinics everywhere needed, at juvenile courts, schools, colleges, centers of population. To awaken and carry on our dormant State Society for Mental Hygiene will take personnel and money. The great good that this movement would do would be just as significant and far reaching as money and effort spent for physical health. The time has come to lay the facts before our people regarding mental disorders and the opportunities of Mental Hygiene. The mentally handicapped are battling against odds because they are not understood. The fullness, happiness and efficiency of their lives can be increased. Let us make common warfare against disease—physical, mental and moral. "This last spectre can be faced with courage and the confidence that some day it will take its place among those that have lost forever their power to darken human lives."

Above I alluded to the fact that this is an important hour in the history of North Carolina to get ready for a great forward movement in health matters. We have a feeling that great resources are coming to help in our medical problem of ministering to our sick. We have never had in North Carolina a more hopeful outlook, and there is no time to lose for getting ready to utilize the forces which are coming to us through local hospitals. But, if we are not ready, much will be lost in not being able to utilize the funds of the Duke Foundation.

In saying above that the hour has come in North Carolina that we, the profession, should begin at once an immediate and energetic movement to get ready for the great opportunity just ahead in giving to our people the most effective service. I had in mind what the Duke Foundation will soon bring to our help. This Foundation starts at $40,000,000 for all purposes, with twenty per cent addition reserved annually to add to the principal. Therefore this Foundation is a growing one, getting bigger and better "every day in every way." Thirty-two per cent goes for the purchase of health, both mental and physical, for the people in North and South Carolina. This benefaction is to start, it is understood, in 1926, to be expended in the amount of $1.00 a day for free beds.

As I study the provisions of this Foundation, from what I have heard about it, the more wonderful the possibilities look to me. An income of over $600,000 to develop local hospitals and to enlarge the scope of our work in purchasing health for our people, their greatest asset, is a prospect worthy of our consideration and gratitude. Do not our hearts thrill with joy in seeing that one of our number is the man of the hour ready to meet this opportunity? This year he will gather from the United States and Canada, and elsewhere if necessary, information how best to plan and manage this beneficent fund "in properly relating the provisions of the Duke Foundation to the medical, mental and surgical needs of the Carolinas." We have men in these two states who have been recognized leaders both in medicine and surgery for a long time. Our leader will, no doubt, look to you for the results of your experience and advice in serving the needs peculiar to your locali-

ties, as well as to the leaders of the medical and surgical world generally, in the development of his plan of work.

Nothing of this kind has ever knocked at our door before. And it is so democratic! It has come to help us to open the eyes of the blind, to unstop the ears of the deaf, to aid the lame to walk. Yes, it is Christ-like, seeking out those that cannot help themselves out of darkness into light, from death into life. Listen to the inspiring words of old Walt Whitman, that so well illustrate the democracy of this benevolent foundation:

"Not till the sun excludes you do I exclude you,
Not till the waters refuse to glisten for you, do my words refuse to glisten and rustle for you.
Whoever you are, you are he or she for whom the earth is solid and liquid,
You are he or she for whom the sun and moon hang in the sky.
For none more than you are the present and the past,
For none more than you is immortality."

We want to assure W. S. Rankin that, as he leads in this Democracy of Health with its heavy responsibilities, coupled with rare privileges for service, we are behind him with all our heart, soul, strength, and mind. We wish for him to be inspired and led by the spirit of the lowly Nazarene, who went about doing good while He was on earth by healing physical, mental and soul sickness wherever He found the need, and who, from His work in the ministry of restoring health, has ever since been known as "The Great Physician."

Dr. J. W. Long, Greensboro:

Mr. Chairman, it seems to me that, in view of the magnificent address which our President has just delivered to this Society, it is but proper that his address should be referred to a committee to consider it as a whole, and especially to consider certain matters which he has discussed in that address.

I move, sir, that such a committee be appointed.

The motion was regularly seconded and was unanimously carried. The Chairman appointed the following committee:

Dr. J. Howell Way, Waynesville,
Dr. E. J. Wood, Wilmington,
Dr. A. A. Kent, Lenoir.

Secretary L. B. McBrayer, Southern Pines:

I am glad to announce that there is a larger number of doctors registered this morning than has ever before been registered so early in the meeting. (Applause.)

Secretary McBrayer then made several announcements, after which the Society adjourned for the various Section meetings.

TUESDAY, APRIL 28, 1925, 8:00 P. M.

Dr. Albert Anderson, President:

You will see from our program for this evening that we were to have had an address by Dr. Olin West, of Chicago, Secretary and General Manager of the American Medical Association. I regret the necessity of having to announce that Dr. West was unable to come, being detained on account of sickness.

I shall ask our Secretary-Treasurer to introduce the first speaker of the evening, Dr. C. M. Van Poole, of Salisbury.

Dr. L. B. McBrayer, Secretary-Treasurer:

Everybody in the Society knows Dr. Van Poole. The first time I attended a meeting of the Society he was a distinguished member. The entire membership recognized his ability by making him President, an office to which he was an ornament. It is entirely unnecessary for me to tell this audience anything about him, because they all know him. Dr. Van Poole is now going to speak on "The Relationship of the Profession to the Laity, and Vice Versa."

THE RELATION OF THE PHYSICIAN TO THE PUBLIC, AND VICE VERSA

C. M. Van Poole, M. D., Salisbury

The supreme factor in our lives is health, happiness, and service to God and the State. It was evolved by the people from their experience with primeval conditions as the instrument of coöperation among individual persons for registering their composite will and promoting their joint welfare. It has endured to the present day, and still exerts supreme authority extending to the life of every person. It acts primarily in the interest of the people as a whole, but is necessarily founded upon the existence, effectiveness, and prosperity of the component individual person, without whom there could be no people and no state. It pre-supposes its own perpetuity. Seeking increased efficiency, it strives to abolish every menace to the existence or welfare of the individual person. For that purpose it employs government, which is the State's instrumentality for ascertaining and enforcing the people's will.

Disease is deviation from the healthy or normal condition of any of the functions or tissues of the individual human body, or a perturbation of its normal actions. Its antithesis is health, which is soundness of body, or normal bodily condition, or that condition of the living human body and of its various parts and functions conducive to its efficiency and prolonged life. Disease impairs the body and mind of the individual person, ruins his efficiency, and ultimately destroys him. The strength of a state, therefore, is but the resultant of the combined virtues, health, and manly efforts of all individuals within its bounds. Moreover, though disease originates in the individual, it spreads by contagion from one person to another, and, if unarrested, ultimately to the whole people, sometimes ending in historic national plagues.

Without health and energy, the industrial, the parental, the social, and all other activities become more or less impossible. Vigorous health, perfect peace with God, and its accompanying high spirits, contribute a larger element of happiness than any other things whatever.

Occasionally only do we meet with an example of vigorous health continued to old age; hourly do we meet with examples of acute disorders, chronic ailments, general debility, or premature decrepitude. We need not dwell on the natural pain, the weariness, the gloom, the waste of time and money thus entailed; but only consider how greatly ill-health hinders the discharge of all duties; makes business often impossible, and always more difficult; produces an irritability fatal to the right management of children; puts the functions of citizenship out of the question, and makes amusement a bore.

Public health, therefore, is the foundation on which repose the happiness, the stability, the comfort, and the confidence of the people and the power of a country. The care of the public health is the first duty of a state, for a vigorous, healthy population is the greatest asset of which any community can boast. Health is the foundation of all prosperity and happiness. Every life has a value in dollars and cents, but every life also has a value that cannot be measured in dollars and cents. We desire wealth, which, if not properly used, corrupts, destroys, and undermines the morals of the country, forgetting that intrinsic value resides only in man; the value of things is derived from man, and the greater or less value of things is dependent upon the character and the quality of man. A lively consciousness of this fact is the principal motive of progress in all well-governed countries; therefore the best government for any man is that which is best suited to develop the best possibilities that are in him. No personal rights can stand in the way of the individual and social good. In the highest civilization, the sense of selfishness must give place to the sense of service.

Of late years the doctrine of conservation has received a new impetus in our American system of government. Originally this doctrine was applied largely to mines, forests, water power, and our natural resources. Later it was extended to hogs, cattle, buffalo, and wild animals generally, and, strange to say, lastly it was applied to human beings. Sanely and sensibly it was argued that life is worth little in abstract, but must be made effective by the conservation of the health to which that life is entitled.

With respect to the destructiveness of disease the world has always been confronted by a practical condition, not a theory. Great plagues have destroyed people in vast numbers and threatened whole populations. We glorify the prodigious victories of the medical profession over smallpox, yellow fever, malaria, diphtheria, typhoid fever, and other scourges of individuals and peoples, achievements in which the genius and patriotism of man were never more beneficial to the human race. Those devastating plagues that once threatened the existence of nations have been checked or

entirely stopped. We are prone to act as though all diseases had been conquered for all time, but students of vital statistics know that the people of the world still face the necessity of immediately averting other destructive diseases that are now causing an alarming waste of human life. Nor is it necessary to study statistics to become aware of this fact. It is plainly deducible from our everyday observations. The necessity of continuous warfare against destruction by disease now as ever confronts the peoples of the world.

Nothing, therefore, more vitally touches the State than the promotion of the health of its individual members, involving as it does the State's existence. Disease is an ever impending menace to the State. It comes not only within the province of the State's concern, but it is the State's first concern. It must be discovered, prevented to the extent practicable, and abolished if possible, as the State's endeavor toward self-preservation.

As a consequence of the prevalence and destructiveness of disease, and the warfare necessary to be continuously waged by the individual and the State against it, many persons have from time immemorial engaged in healing the sick and preventing the spread of disease as an occupation. They are our modern physicians, who have devoted themselves to discovering and cataloging the kinds of diseases seen by them, observing and recording their origins and differentiating characteristics, diagnosing their presence in the individual person, and discovering and applying remedial agents for curing them. They have amassed the world's great store of scientific information about diseases and their treatment, preserved in thousands of books.

The physician's occupation has become probably the world's greatest profession: great in the number of persons devoting their lives to it; great in their intellectual attainments, high character, and the respect and admiration in which the world holds them; great in the priceless knowledge, skill, and services supplied by them to relieve the suffering and sorrow of men, women and children; great in their diligence and progress in acquiring new knowledge and more skill; great in the supremacy which they have attained, and are still extending, over destructive diseases; and great in their power to insure health and happiness to all mankind.

The physician is the only agency actively devoted to studying, preventing and eradicating disease, and is the chief subject for consideration by the State in making provisions for protecting the public health.

The State should not seek, and, so far as I know, never has sought in any way, to limit a person in his choice of a physician from practitioners legally determined by it to be familiar with diseases, competent to make scientific diagnosis on which to base treatment, and informed generally on the various curative agents. The State should see that the public shall not be imposed upon by persons who lay claim to knowledge of diseases and the laws of health which they do not possess. It should prevent the perpe-

tration of the kind of dangerous fraud which costs the public not only its money but inflicts on men, women, and children sorrow, pain, and death, and which spreads disease among the people.

In all legislative acts passed for regulating the occupation of healing the sick, ample provisions should be made for rendering it impossible to use the profession for committing frauds on the people. There is no part of a legislative act relating to this subject which provides a greater service for the people than that prescribing grounds for the revocation of the licenses of unworthy doctors and for the refusal to grant licenses to unworthy applicants for them.

Wrong is wrong wherever it may be found, and the watchword of the state should be to put the most effective means into the hands of public officers for carrying on a vigorous and constant warfare against men who attempt to make villiany a profitable business, more especially when it is done through the agency of that profession to which all men have learned to look with the hope of receiving fair and efficient treatment for relief from disease, suffering, and death. Members of the medical profession are trying to do their whole duty in this respect, though it is a difficult task, and sometimes a thankless one, to ferret out scoundrels who conceal themselves under the cloak of professional decency, and drag them from the protection of professional privileges.

For the present purpose it is not necessary to rehearse the evils of the practice of healing by incompetent or immoral persons. They are everywhere recognized, and in a large measure patronized by the people, and are accepted and licensed generally by legislatures and courts as being amply competent to combat the most difficult diseases.

A better informed laity is, in my opinion, what is most needed that this matter might be intelligently settled. Some of the disfavor in which the profession is held is due to the fact that the public has not been educated up to a real, true realization of the fact that properly enforced, or rather properly respected, ethics helps the lay people as much as or more than it does the profession. And yet we are not entirely free from justifiable criticism in some respects, for, as you know and as the public has not forgotten, springing from a secretive priesthood, medicine, for countless ages, maintained a similar secretiveness, surrounding its practices with linguistic and other presumably imposing formalities. Some of that influence lurks about our work still—in our Latin prescriptions, in our nomenclature of diseased processes, in our reluctance to enlighten the public.

The time has come, it seems to me, when some of the ancient ritual that has stood between us and the laity should be discarded. When Martin Luther, in his hiding place in the Wartburg, translated the Bible, he abolished forever the chasm that had existed since time began between the priest and the layman. While it may have lessened somewhat the layman's awe for the priesthood, it greatly increased his interest in religious subjects and made him more understanding and more coöperative.

If we step down a little from our pedestal, we shall surely come to a better understanding with the laity. Prescription writing, with its barbaric Latinity, understood of few men, is gradually becoming simplified and Anglicised, and within a reasonable period will be practically couched in English terms. It is true, however, that our scientific nomenclature is not so readily transformed into English.

If at this point I might give vent to my feelings on the matter of the dead languages, I should say that the present attempt to eradicate Latin and Greek from the college curriculum is a terrible mistake.

While on the subject of enlightening the public the subject of medical ethics should receive due consideration, a subject so often misunderstood by the laity. If medical ethics is what the laity conceive it to be, a tacit understanding between confidence men for the exploitation of the laity, then the sooner we cast it out from among us, the better. But if it is something else, something worth while, something desirable, perhaps essential, then it is our duty to enlighten the public as to the meaning and purpose of medical ethics. And what is it after all, this alleged secret understanding? It is a code of honor, the growth of a thousand years, that works as much for the protection of the laity as for the benefit of the doctor. It often happens that a patient brought to a consultant's office for examination presents himself later for treatment by the consultant. If the consultant requests the patient to bring a letter from his family physician, the letter is usually forthcoming, but the incident always leaves a bitter feeling between the two doctors. I believe that the consultant who takes patients under such conditions will sooner or later cease to have a consulting practice. Of course, every patient has the inalienable right to change doctors, but human nature being what it is, the family physician, without whose mediation the consultant would never have seen nor heard of the patient, will feel resentful, and justly so, if the consultant accepts the patient, unless he, the family physician, takes the initiative.

There are other phases of medical ethics which, to the layman, seem designed for his disadvantage, but which, in their ultimate interpretation, are advantageous. It is only when looked at through the narrow aperture of immediate personal advantage that they appear hostile to the interests of the lay public.

The education of the laity, of which I have already spoken, is a goal for which we must strive individually and collectively through our national and local organizations. As far as personal efforts are concerned, the reluctance that medical men show is based on an abhorrence of publicity, of personal publicity. The abhorrence is altogether commendable, and the feeling that underlies it should not be sacrificed on the altar of popular education, but I submit as a reasonable propostion that education of the laity and proper reserve or modesty on the part of medical men are not incompatible.

Properly restricted newspaper publicity of medical meetings, in which personalities are kept in the background, also helps to

educate the public, and if and when newspaper editors once realize the importance of having medical news properly edited by a medical co-editor, much of the disturbing misinformation in which our papers now abound will be avoided.

The remedy for whatever just criticism may lie against us is, in the main, strenuous efforts toward a broader medical education of the laity.

A society, such as this, can do splendid missionary work by arranging special meetings to which the public in general is invited, thus bringing to the laity a knowledge of subjects of fundamental importance. In that way it will do much to justify specialization in medicine and to enhance the prestige of the great calling to which we are all devoted.

An interesting and able paper was read by Dr. William McKim, Marriott, of St. Louis, Missouri, on nephritis in children as related to focal infections. (Note: This paper could not be secured for publication.)

It was voted, upon motion of Dr. McBrayer, to send a telegram of regrets to Dr. Olin West, Secretary and General Manager of the American Medical Association, who was to have addressed the Society at this session.

The meeting then adjourned.

N.B.—Dr. Marriott's paper on "Nephritis in Children as Related to Focal Infections" was received too late to appear in its proper place in the General Sessions. Dr. Marriott's article appears farther on in the book, beginning on page 599.

WEDNESDAY, APRIL 29, 8:00 P. M.
DR. ALBERT ANDERSON, PRESIDENT, IN THE CHAIR

REPORT OF COMMITTEE ON OBITUARIES

DR KEMP P. NEAL, CHAIRMAN, RALEIGH

DR. NEAL:

The following members of the Medical Society of the State of North Carolina and other physicians of North Carolina have died since our last annual meeting:

DR. J. N. ANDERSON
ALBEMARLE

DR. JAMES A. AUSTIN
CHARLOTTE

DR. WM. A. BRADSHER
ROXBORO

DR. N. B. BROUGHTON
RALEIGH

*DR. R. R. BURGESS
LIBERTY

DR. J. R. CAMPELL
NEWTON

DR. H. M. S. CASON
EDENTON

*4R. DAVID C. DICKS

*DR. THOS. GRAHAM FAULKNER
KINSTON

DR. BRANCH T. FIELDS
GREENSBORO

DR. MARSHALL HALL FLETCHER
(Honorary Fellow—Past President)
ASHEVILLE

DR. ALBERT C. COX
LINCOLNTON

*DR. Z. L. MERRITT
BOLTON

*DR. H. Y. MOTT
IREDELL COUNTY

**DR. JOHN W. PAGE
BURLINGTON

*DR. R. D. PATTERSON

DR. L. J. PICOT
(Honorary Fellow)
LITTLETON

*DR. H. W. QUEEN
ASHEVILLE

*DR. A. M. REDFERN
CHARLOTTE

DR. H. C. ROBERTS
COATS

DR. HENRY B. ROWE
MT. AIRY

DR. F. C. SHUGART
HIGH POINT

DR. R. A. FREEMAN
(Honorary Fellow)
BURLINGTON

**DR. ELIAS FULP
FULP

DR.ARTHUR W. GREENE
AHOSKIE

DR. W. H. HARDISON
CRESWELL

DR. W. E. HARGROVE
KINSTON

*DR. PETER PRESTON HAYES

**DR. CHAS. W. HUNT
BREVARD

DR. J. B. H. KNIGHT
(Honorary Fellow)
WILLIAMSTON

**DR. A. E. LEDBETTER
GREENSBORO

DR. EUEL HARRISON LYON
BAHAMA

**DR. H. L. MacFAYDEN
WAYNESVILLE

4R. GILBERT McLEOD
CARTHAGE

DR. FREDERICK L. SILER
FRANKLIN

**DR. J. A. SISKE
PLEASANT GARDEN

**DR. MATT RANSON STEPHENSON
SEABOARD

**DR. T. H. TEAGUE
BRYSON CITY

*DR. J. W. TRACY
KINGS MOUNTAIN

**DR. H. M. WIL4ER
CHARLOTTE

**DR. G. D. WILLIAMS
GATESVILLE

**DR. JOHN BUXTON WILLIAMS
GUPTON

DR. J. E. WILSON
CANTON

**DR. EUGENE McD. YOUNT
STATESVILLE

*Non-member **Formerly a member

JASPER N. ANDERSON, M. D.

Doctor Jasper N. Anderson, of Albemarle, was born July 29, 1872, at Pittsboro, N. C.

His literary education was obtained at Albemarle High School, Mount Pleasant Institute, and Davis Military School. He attended Indianapolis Medical College, but graduated from the University of Maryland in 1895. He married Miss Daisy Walker Baldwin in 1902. Dr. Anderson first began practicing medicine with his father in Albemarle, where he remained until 1897. From 1897 to 1901 he practiced in Lexington, N. C., returning to Albemarle in 1901, where he remained until the beginning of our entry into the World War.

He entered the Army in 1917, serving overseas with the 79th Division, being discharged in 1919.

In 1923 Dr. Anderson was elected President of the Seventh District Medical Society. He also at one time was president of the Stanly County Medical Society. In addition to this, he was for several years county health officer.

Dr. Anderson was a member of the Presbyterian Church. He died February 16, 1925.

JAMES AARON AUSTIN, M. D.

Dr. James Aaron Austin, age 64, one of the best known physicians of Charlotte, died at his home in Charlotte, December 16, 1924, after an illness of several months.

Doctor Austin was born in Union County in 1860. He graduated from Jefferson Medical College in 1887, and joined the State Medical Society in 1904.

He was a very popular physician, and was looked upon as an example of the old type of "family doctor."

He was at one time a city alderman, and was regarded as the father of the parks and playground movement in Charlotte.

Doctor Austin is survived by his widow, four sons and three daughters.

JAMES AARON AUSTIN, M. D.

BY

WILLIAM ALLAN, M. D., CHARLOTTE

The closing days of 1924 brought to the end of life one of Charlotte's most useful citizens, Dr. James Aaron Austin. He was born in 1860 in Goose Creek Township, Union County, the son of A. J. and M. E. Austin, and, during the hard years following the Civil War, helped his father with the farm and gin and saw mills. He attended the neighborhood schools until twenty-one years of age, when he went to the Palmerville High School, and, the next year, read medicine under the late Dr. W. C. Ramsey of Monroe. In 1883 he attended Jefferson Medical College, and spent the next two years practicing in his home community. In December, 1882, he married Miss Sarah Wilma Duncan, only daughter of W. W. and S. J. Duncan of Union County. Two years later he returned to

medical college with his wife and child (now Dr. F. D. Austin), graduating in 1887. For the next five years he practiced at Long's Store, and then moved to upper Union County, where he remained fifteen years; in 1902 he moved to Charlotte, where he remained in active practice as long as he lived.

In spite of a large and exacting practice, Dr. Austin had many other interests, and was always an outstanding figure in affairs of church and state. Besides his farming and saw mill interests, he built the first local telephone line in Union County, in 1896, and the first telephone line from Charlotte to upper Union County, in 1901. He served on the Park and Tree Commission under Mayor Franklin, and was on the executive committee of the Board of Aldermen during the Bland administration.

In 1891 he united with Bethlehem Presbyterian Church in Union County, later serving as deacon for five years, then as elder. He was a charter member of Caldwell Memorial Presbyterian Church in Charlotte, and served as an elder until his death.

Dr. Austin and his wife were notably successful in bringing up a fine family of four sons and three daughters, and the Doctor's influence in his household is well illustrated by his becoming the head of a medical family, two of his sons and two of his sons-in-law being engaged in the practice of medicine. The Doctor was a big, two-fisted man, trained by early struggles to serve his fellowman through good years and bad, with unswerving faithfulness and broad human sympathy. Great physical vigor, a strong character, a good sense of humor, and abundant optimism fitted him splendidly for his long service to the sick and endeared him to his associates.

WILLIAM A. BRADSHER, M. D.

Doctor William Archibald Bradsher, son of D. W. Bradsher, was born in Person County, September 15, 1877.

He graduated from Wake Forest College in 1899. The year of his graduation he was elected Superintendent of the Roxboro School, holding this position for two years. He then began the study of medicine at the University of Maryland, receiving his M. D. degree from that institution in 1904.

He returned to his home town, Roxboro, and began practice in 1904. He was successful from the beginning and soon built up an enormous practice.

Doctor Bradsher married Miss Anna P. Merritt in 1910. There are four children.

For a number of years Doctor Bradsher served as county health officer. He also was a member of the board of town commissioners, and during the World War he was chairman of the local exemption board for Person County.

He was a member of the Baptist Church and superintendent of the Sunday School for many years.

Doctor Bradsher died suddenly September 17, 1924, and was buried in Roxboro Cemetery.

NEEDHAM B. BROUGHTON, M. D.

Doctor Needham Bryant Broughton, of Raleigh, died April 21, 1925, after an illness of several months.

Doctor Broughton was born in Raleigh, November 30, 1890, the son of Needham B. Broughton and Carolina Longee Broughton. He received his preliminary education at Raleigh High School and Wake Forest College.

He received his M. D. degree from the University of Pennsylvania. After a short time spent in general practice in Raleigh, Doctor Broughton took post-graduate work in New York, specializing in pediatrics, and in 1920 began limiting his work to that specialty. He had begun to build up a good practice when his health began to fail, and in the fall of 1924 he was forced to give up work altogether.

Doctor Broughton was a member of the board of deacons of Tabernacle Baptist Church, a member of Raleigh Academy of Medicine, Sigma Chi Literary and Phi Chi Medical Fraternities. He was one of the organizers of the Raleigh Lion's Club.

He is survived by his widow, who was before her marriage Miss Lorna Bell of Wakefield, and one daughter.

H. M. S. CASON, M. D.

Doctor Harry M. S. Cason, son of Clifton Cason and Mary Shaw Cason, was born at Edenton, N. C., February 29, 1876.

He was educated at Horner Military School, the University of North Carolina, and the University of Maryland, where he received his M. D. degree in 1898.

Immediately after graduation he located in Edenton, where he remained until his death, which occurred September 23, 1924.

In 1905 Doctor Cason married Miss Alice Lymar Makely, daughter of Mr. and Mrs. Metrah Makely of Edenton, and she and one daughter survive him.

He was a vestryman of St. Paul's Episcopal Church, and a member of Unanimity Lodge No. 7 of the Order of Masons. He had been a recent president of the First District North Carolina Medical Society.

His skill and ability, his rare personality, and his acumen and judgment combined to make him an outstanding figure in his community as the beloved physician, loyal friend, and progressive citizen.

Dr. Cyrus Thompson, Jacksonville:

Mr. President, I knew Dr. Cason. I did not know until some time after he was dead that he was gone. Harry Cason was a very genial soul. He was a good practitioner, he was an honorable gentleman; he was a man, as Carlyle said of Danton in his comparison of Danton with Robespierre, he was a man with the heart of a man in him. I loved him. In the meetings of the Seaboard Medical Association of Virginia and North Carolina I saw Harry Cason of Edenton, and I loved him, Mr. President, after the manner

in which I love you, because he was your sort of man. I do not know what more I could say about him, but I say that much for him now that he is gone. He was a genial, kindly, great-hearted gentleman, Harry Cason of Edenton.

THOMAS GRAHAM FAULKNER, M. D.

BY

ALBERT D. PARROTT, M. D., KINSTON.

Doctor Thomas Graham Faulkner was born June 15, 1886, at Shelby, N. C., but was removed shortly thereafter to Kinston, N. C., where he was reared. While in Kinston he received his scholastic training under very competent instructors, both private and public. He was an unusually precocious lad and therefore was very easy to train, and was very much further advanced than the average young man of his age. In fact, he was almost as well educated as most are when they finish with an academic degree. After finishing the public schools he did a great deal of collateral reading. He was graduated from the University College of Medicine, Richmond, Va., in 1910 with honors, and following his graduation spent one year as an interne at Virginia Hospital, Richmond, Va., thus increasing his experience and converting him into an unusually well trained medical man. After his term of service at the Virginia Hospital had expired he began practice at Dover, N. C., contracting with a large mill, and at the same time doing outside work. His work at Dover was of a very high order. Having a naturally bright mind, he made quite a success of his work. If he was more interested in one phase of it than another, the favored part must have been prevention. Often I have known him, in prescribing and treating patients, to notice some small thing that to them appeared quite insignificant, but his trained eye was a forerunner of trouble, and he spent time in explaining this condition and advising them to have it attended to at once.

On April 7, 1911, while in bathing, a terrible thing happened. He dived into the river in a place he thought deep, but proved shallow, and struck head foremost, fracturing the bodies of his fifth, sixth and seven cervical vertebrae. He was paralyzed from his arms downward and rendered an invalid for the rest of his life, nearly fourteen years, dying February 6, 1925. He bore his suffering with great fortitude, but kind friends and a devoted nurse largely dulled the keen edge of suffering.

Born of a family of fighters, Graham Faulkner throughout his life was a fighter. First, since like most Southern boys he had little money, he fought for his education and won. Later he fought with unlimited energy and enthusiasm for success and reputation as a doctor, and was winning. He fought a brave fight in his last illness, and at first he won. I ask the question, did he not win his reward—"Well done, good and faithful servant"? But while he won, we lost a friend, an ardent and enthusiastic physician and surgeon, who was always interested in the advancement of medicine and the progress of science.

Let us not mourn for him, but stand erect with uplifted head when we speak his name, with a smile of pride for the manly part he bore.

Kind friend, we bid you a last farewell, and hope that when we have served our time here we may be deemed worthy to greet you in a fairer and happier land.

"Green be the turf above thee,
Friend of my better days,
None knew thee but to love thee
None named thee but to praise."

BRANCH T. FIELDS, M. D.

Doctor Branch Tucker Fields was born in Greensboro, N. C., February 6, 1886, the son of Mr. and Mrs. William A. Fields.

Dr. Fields received his pre-medical education in the public schools of Greensboro, and later entered the University College of Medicine, Richmond, Va., from which he graduated in 1912.

His entire professional life was spent in Greensboro. He was a member of the Guilford County Medical Society and of the State Medical Society, and served for years on the staff of St. Leo's Hospital.

Dr. Fields is survived by his wife, Annie Bell Fields, the daughter of Mr. and Mrs. E. A. Rives of Greensboro, and four small children.

He was a faithful and untiring worker and had an enormous practice and a host of friends.

Dr. Fields was a member of the Methodist Church. He died October 23, 1924, of acute cardiac dilitation.

MARSHALL HALL FLETCHER, M. D.

BY

CIVITAN CLUB, ASHEVILLE

Following a memorial service for the late Dr. M. H. Fletcher, the Civitan Club of Asheville adopted resolutions asking the city to name the new West Asheville High School in honor of Dr. Fletcher, the school to be known as the Hall Fletcher High School.

Tributes were paid to Dr. Fletcher by Dr. Charles L. Minor and Judge Thomas A. Jones, Judge Jones making the motion as to the name of the school.

Dr. Minor's tribute to Dr. Fletcher was as follows:

If the purpose of this club is to encourage good citizenship, then I need not hesitate to claim that in Dr. Fletcher we had the ideal citizen. I have lived in Asheville thirty years and have watched the lives of many men who have been prominent in our city. In that time there have been many who have been an honor to Asheville and to whom the city owes much, and remembers with gratitude as her benefactors in many ways.

But among all these men there has been no one, I believe, who in his quiet, unobtrusive way has exerted a more valuable influence

on this community. It is not my place today to dwell on what Dr. Fletcher did as a beloved physician or as a skilled surgeon, for the benefit of the sick and suffering, valuable as that work was. Dearly as he loved his profession and much as he did to give it an honorable place in our city, he was just as interested in all things that tended to make Asheville a better place to live in: hospitals, good roads, public health, good schools, and, last but not least, and what all American cities need so much, clean politics.

Though at the time of his death, owing to the long and sad sickness which followed his unselfish giving to his country in the great war, he was not well known to the many new citizens who have in late years been flocking to our mountain metropolis, most of our people do not need to be told that our city is a better city because of this man whom we are gathered today to honor.

The rugged honesty which was an outstanding trait of his character made him a little blunt in his address, a bluntness which the many who admired him loved, speaking as it did for the man's forthright honesty. But to those who have known him well all these years there was another and an even finer way in which he was the model citizen.

The man who brings new business and new money to a town, or new material developments, is useful. He who makes it a better place for children to grow up in deserves our heartfelt gratitude; but the best citizen and him whom we chiefly honor is the man who quietly but steadily, in his daily walk, holds up to his fellow citizens the example of a truthful, honorable, upright life, as Hall Fletcher did, and in so doing, all unconsciously to himself, he was leaving an influence on and doing a service to his fellow citizens, the value of which is beyond any words of mine to express. And it must be a consolation to his loved ones to know that this man's simple, upright life and character, his absolute truthfulness, will be reborn in the lives of other men in whom, by the irresistible power of example, he will live again.

Such a character is a priceless blessing to the community in which it grows and flowers and bears fruit, and we honor ourselves and help our children to be better men and women as we honor and commemorate it.

Hence I feel that the suggestion made by the Medical Society, that our Commissioners be urged to perpetuate his name and fame in the name of a prominent street or public building, is a wise one, in order that our children and our children's children, asking why it is so named, may be told that it commemorates that greatest of God's works—an honest man.

(Note: The Asheville City Commissioners have since acted upon this recommendation, and have named the West Asheville High School the "Hall Fletcher High School.")

MARSHALL HALL FLETCHER, M. D.

(The following resolutions of the Committee appointed to prepare an appreciation of Dr. Marshall Hall Fletcher were read at the regular meeting of the Buncombe County Medical Society, Monday, February 2, 1925, by Doctor Minor.)

We, the members of the Buncombe County Medical Society, wish to put on record the very real grief we feel in the death of Doctor M. Hall Fletcher, one of our most honored and loved colleagues. He has been a valued and influential member of this society for many long and useful years, and has always been an example to us all, especially to his younger colleagues, of what the highest type of physician should be, and his high ideals, translated into an upright life, have made it easier for other doctors to live up to the best traditions of our noble profession.

For years he has been one of the outstanding medical men of this city and a leading, successful, and beloved surgeon, yet he did not limit his activities and his interests to the scope of our calling, but was active, useful, and influential in many causes whose aim was the betterment of conditions in Asheville.

The founder, and long the head of the board of health, he gave to it gladly and without price his time, his earnest interest, and his ungrudging work, and laid broad and deep the foundations on which our present efficient health department was built.

In many non-medical civic activities, also, he was constantly though quietly influencing our city and our citizens for good, and we as doctors are proud that our profession should have given such a citizen to Asheville.

Truth, honesty, and an unflinching sense of honor and duty were the outstanding qualities of his high character, and, though he has left us, the blessed influence of these things will live in our midst, to the good of the community, in the lives of the men he has impressed by his life.

We wish to express to his widow and daughter and to his family our very deep and real sympathy in their great loss, and to assure them that his name will ever be loved and honored by the members of this society.

We will also spread these resolutions on a special page of our minutes, that other men in the future may know what manner of man he was. We will also publish them in our local papers and those of Hendersonville, and in "Southern Medicine and Surgery," of Charlotte, that the city and the state may know how highly we esteemed him.

Finally, in order to keep his name fresh in the memory of all our fellow-citizens, and that his noble example may be a living influence in other days, and to do permanent honor to his memory, we would petition our commissioners to give his name to some prominent street or park or building in the city, as a lasting evi-

dence of the very general and deep appreciation of our citizens of the fine work of many kinds which he did for the good of Asheville.

O. F. Eckel, M. D.
M. L. Stevens, M. D.
Chas. L. Minor, M. D.
Committee of the Buncombe County Medical Society.

These resolutions were adopted unanimously by the Buncombe County Medical Society.

Dr. L. B. McBrayer, Secretary:

It was my privilege to serve with Dr. Fletcher in many and varied capacities, and I esteem it a privilege to add my word of appreciation of one of the very best men that ever lived in North Carolina.

Dr. J. M. Parrott, Kinston:

I feel that Dr. Fletcher deserves a great deal more than I could say. I knew him very well; he was a very dear friend of mine; and his passing marks the going of one of the very finest characters, I think, that the state has produced in many, many years. I really wish that I felt I could express the feeling of admiration which I had for Dr. Fletcher, and which I entertain for his memory. He was an inspiration to those of us who had the pleasure of working with him. He was fair and just, and with it all he was a merciful man. He was kindly. He was what I should call, Mr. President, a kingly man.

RICHARD A. FREEMAN, M. D.

Doctor Richard A. Freeman was born in Orange County, near Oaks, seventy-eight years ago. His early education was secured at The Doctor Wilson Private School at Hawfields, and at Hillsboro Military School. His medical education was gotten at the Washington University of Medicine, Baltimore, Md., where he attended lectures in 1869-1870.

He settled in Orange County, where he began the practice of medicine.

In 1873 he married Elvira Newlin.

In 1883 he located in Burlington and continued in active practice there until 1920, when his health began to fail.

Doctor Freeman was very interested in business, as well as a busy doctor. He was for years county treasurer, also being a member of the Odd Fellows, Masonic Lodge, Pythians, Sons and Daughters of Liberty, and practically every other fraternal organization in Burlington.

He was a physician of the old school type, enjoying a life of hard work for the benefit of the whole community in which he lived.

He died at the Wesley Long Hospital in Greensboro, September 17, 1924.

ELIAS FULP, M. D.

Doctor Elias Fulp was born near Walnut Cove, N. C., March 4, 1859, and died at his home at Fulp, N. C., June 17, 1924.

He received his academic education near his home and at Kernersville, N. C. He was a member of the first medical class organized at the University of North Carolina, at which place he completed his pre-medical education. He graduated in medicine from the University Medical School of New York City in 1882.

Doctor Fulp was a member of Winston Lodge No. 167, A. F. and A. M. He married Miss Lula M. Lindsay, of Kernersville, N. C.

He was a very active physician for forty years, and was held in high esteem in his community, as well as over the entire state.

ARTHUR W. GREENE, M. D.

Doctor Arthur W. Greene, one of Ahoskie's beloved and successful physicians, died in St. Vincent's Hospital, Norfolk, Va., February 4, 1925, where he was at the time under treatment for cirrhosis of the liver. Doctor Green was born at Mars Hill, Bertie County, North Carolina, March 18, 1878. He received his medical training at the University College of Medicine, Richmond, Va., from which college he graduated with the class of 1904. After finishing his course in medicine he located in Ahoskie, N. C., where he continued in active practice up until a short time preceding his death. He was married on December 28, 1905, to Mary Patterson Williams, who, with their three children, survives him.

He was a thirty-second degree Mason, a Shriner, a consistent member of the Baptist Church, a member of the Hertford County and the State Medical Societies, and also of the Seaboard Medical Society and Southern Medical Association. Through his untiring efforts and devotion to the relief of suffering humanity he had built for himself a large and successful practice and secured thereby the love and confidence of the people among whom he labored.

WILLIAM H. HARDISON, M. D.

Doctor William H. Hardison was born in Washington County, N. C. He served in the Civil War, and graduated in medicine from the Washington University of Maryland in 1870.

He received his license to practice medicine in 1885; joined the State Medical Society in 1890.

The remainder of his life was spent at Creswell, N. C., where he practiced his profession for fifty-five years.

He was for several years president of his county medical society; and for many years a member of the county board of health.

Doctor Hardison died March 26, 1925, from general arteriosclerosis. Probably no doctor in the country ever enjoyed a larger number of friends. He never refused to go when called, irrespective of money or class, and died almost a pauper.

Dr. Cyrus Thompson, Jacksonville:

If Dr. Spruill were in the audience I know he would be glad to say a word in memory of Dr. Will Hardison. I do not know how

many of you knew him. I have seen him in the meetings of this Society, and I have seen him frequently in the meeting of the Seaboard Association of Virginia and North Carolina. He died at something like eighty years of age, I think, sir. He was a gentleman of small stature, very quiet in demeanor, and one of the most lovable men I ever knew, one of the gentlest gentlemen I ever knew. He lived at Creswell, in Washington County, and had practiced there for more than fifty years. Only a year or two ago, I think at the meeting of the State Society in Raleigh, there was Dr. Will Hardison still coming to the meetings, though eighty years old. He always had in him profoundly the professional instinct. He always had in him profoundly the instinct of service. He lived and practiced at Creswell for forty-five or fifty years, and the value of his service to that community was incalculable. When he was eighty odd years old he died of senile dementia, and everybody far and near came to his funeral. You say that he was a failure, because after all his labor he died almost a pauper? No, that is not failure. Success does not mean the accumulation of money, but the love and respect of your fellow citizens, and the ingathering and perpetuation of the love of your kind. This man was one of the most lovable men I ever knew. I wish Joe Spruill were here to tell you about him. I do not say, now he is gone, "God rest his soul"; because God could not do anything but rest the souls of men like Will Hardison.

WILLIAM F. HARGROVE, M. D.

Doctor William F. Hargrove died of apoplexy in his office in Kinston, February 28, 1925.

Doctor Hargrove received his M. D. degree from the University of Maryland in 1901.

For many years he practiced in Tarboro, moving to Kinston in 1922, where he enjoyed a large practice.

He was sixty-three years old. He is survived by one brother and three sisters. He was buried at the old family burying ground five miles from Tarboro, the scene of his birth and early childhood.

WILLIAM F. HARGROVE, M. D.

BY

ROBERT S. MCGEACHY, M. D., KINSTON

Doctor William Franklin Hargrove died about 10 P. M., February 28, 1925.

Just a few minutes before his death some of his friends had left his office after a pleasant chat with him, and he seemed to be in as good health as usual. Not long after the departure of his friends, a colored woman went to his office to consult him and she found him unconscious on the floor. She immediately called help, but he was dead before they could get him on his bed in an adjoining room. Death, coming as it did unexpectedly and suddenly, made the shock to his family and numerous friends distinct and profound.

William Franklin Hargrove, the son of Gray L. and Felicie Little Hargrove, was born on his father's plantation about six miles

from Tarboro, in Edgecombe County, on January 14, 1863. His boyhood was that of a typical country boy who is fond of hunting, fishing and all outdoor sports. He attended the neighborhood school, and later studied under Prof. Frank S. Wilkerson in Tarboro. He also attended Bryant & Stratton Business College in Baltimore, and after his graduation there he was clerk in the Register of Deeds' office in Edgecombe County, and was in the grocery business with Mr. D. Pender for several years.

While residing in Tarboro he boarded with Dr. Julian M. Baker and made frequent trips with him on his professional calls. This intimate association with a man in the active practice of medicine caused him to determine to study medicine, and he entered the medical department of the University of North Carolina in the fall of 1897, completing the course in May, 1899. Entering the University of Maryland that fall, he was graduated from there May 22, 1901. He stood examination and was granted license to practice medicine by the North Carolina State Board of Medical Examiners in May, 1901, and registered with the Clerk of the Court of Edgecombe County, May 30, 1901. He was licensed by the Virginia State Board of Medical Examiners, July 1, 1901. He was resident physician in the University Hospital of Maryland for at least a year after graduation. After completing his interneship in the hospital, Dr. Hargrove located in Kinston for the practice of his profession, and enjoyed a large and lucrative practice until the time of his death.

Dr. Hargrove was a member of the Presbyterian Church. He was of a very quiet and reserved disposition, but had a keen sense of humor and a high sense of honor, and was held in the highest esteem by all who knew him. He never married, and spent practically all of his leisure time reading and studying—it is seldom that one sees a man that read as much as he did. He was passionately fond of children and in return was loved by them.

In concluding this brief and inadequate sketch of a noble man, I feel that the following lines apply truly and aptly to him in his life's work and in his association with his fellow men:

YOUR BIT

To love a little, and read a little,
And smile a little, too;
To greet a friend and help a friend,
And be a friend that's true;
To work a bit and play a bit,
And bless your sheltering roof;
Be fair and square to God and man
And you're above reproof.

CHARLES W. HUNT, M. D.

Doctor Charles W. Hunt was born at Chapel Hill, N. C., and was nearly seventy years old.

Doctor Hunt graduated in the Class of 1880 from the College of Physicians and Surgeons at Baltimore, and in 1881 settled in Transylvania County. With the exception of a short time spent in Asheville, N. C., and Greenville, S. C., his life was passed in Brevard and Transylvania County. He did an enormous general practice, and was probably known by every man, woman and child in Transylvania County.

He married Miss Henrietta P. Anderson, of Washington, D. C., in 1886.

Doctor Hunt is survived by his widow, two sons and three daughters.

J. B. H. KNIGHT, M. D.

Doctor Josiah Burke Haywood Knight was born at Cary, N. C., October 12, 1856, the son of Peter H. and Mary Houghton Knight. His early boyhood was spent on the farm. After finishing Cary High School, he entered Wake Forest College, where he graduated in 1882. He received his M. D. degree in 1885 from the College of Physicians and Surgeons at Baltimore.

Upon graduation he located near Eagle Rock, N. C., where he practiced until 1892. He then moved to Williamston, N. C., where he spent the remainder of his life.

In 1890 Doctor Knight married Miss Ada Ames Bullock, of Baltimore. She and three children survive him.

During his residence in Wake County he acted as coroner for many years. For the last twenty-five years of his life he was local surgeon for the Atlantic Coast Line Railway, and always attended the annual medical meetings of that organization. He was a member of the Southern Medical Association, serving as a delegate to the meeting in Washington in 1923.

He was an active member of the Methodist Church. He died from angina pectoris on September 30, 1924.

E. H. LYON, M. D.

Doctor Euel Harrison Lyon was born at Hester, Granville County, N. C., December 29, 1875, and died in Watts Hospital, Durham, N. C., on July 6, 1924, at the age of 48 years.

He graduated from the University of Maryland in the medical class of 1903, and practiced his profession in Bahama, Durham County, N. C., for twenty-one years, laboring there until his death.

He married Miss Maynie I. Lyon of Stem, Granville County, on June 29, 1904. He attended the M. E. Church; was a Mason, and a member of the Durham-Orange County Medical Society and the State Medical Society.

Doctor Lyon enjoyed a splendid practice and was loved by all who knew him.

HECTOR LAUCHLIN MacFADYEN, M. D.
AN APPRECIATION

BY

J. Howell Way, M. D., Waynesville

Doctor Hector Lauchlin MacFadyen, one of the oldest, in service and years of life, of the staff of surgeons of the Southern Railway System, was born at Big Rockfish, Cumberland County, N. C., September 29, 1847, and died in his home at Waynesville, N. C., February 27, 1925, in his seventy-eighth year. He was descended from a long line of Scotch ancestry, being the son of Archibald Bowie MacFadyen and Christian MacNeil MacFadyen, both natives of Cumberland County, N. C., and in line of descent from the early Scotch settlers of the Cape Fear district of North Carolina. His grandparents on both the paternal and maternal side, emigrated to America from the Isle of Jura, off the coast of Scotland; the ancestor on the maternal side, Neil MacNeil, having set sail from Scotland on August 17, 1792, and arriving off the Carolina coast October 4th, following.

His boyhood days were spent in the rural community of his birth with such studies, occupations, and diversions as were common to boys of that period and section. The outbreak of the War between the States brought to young MacFadyen, though scarcely yet arrived in his 'teens, a feeling of unrest, coupled with the desire for army service, and at barely the age of sixteen he enlisted in the 36th N. C. Infantry Regiment, becoming a courier to Col. Wm. G. Lamb, and attaining the grade of corporal. The war ended, he returned home and received such education as was feasible among the inhabitants of a section of the South which had staked everything on the success of the Confederacy and lost all save honor and self-respect. In the fall of 1874 he entered the Medical School of the University of New York, from which he was graduated with the degree of M. D. on February 13, 1876, after which he immediately entered on the practice of the profession at Elizabethtown, Bladen County, N. C., a short distance from the place of his birth.

On September 19, 1877, Dr. MacFadyen was united in marriage to Miss Mary H. Rinaldi, of Elizabethtown, N. C., who, with their six children, survive him. *En passant*, it is worth of more than incidental mention that this most excellent lady became in every way, through the forty-seven years of their wedded life, more than an ordinary help-mate, and whatever of success came to Dr. MacFadyen in later life, including the rearing of a family of six splendid children, each of whom developed into an individual respected and honored in his or her community of residence, was due, in very large measure, to the felicitous marital selection he was so fortunate in making.

In 1879 a branch of the old Richmond and Danville Railway penetrated the mountain district of Western North Carolina, reaching Asheville, and shortly after Dr. MacFadyen removed from his

eastern North Carolina home and cast his lot with the mountaineers, locating for the practice of his profession at Crabtree, Haywood County, N. C., prior to the coming of the railway to Waynesville, to which town he shortly after removed.

In 1879, Dr. Thomas F. Wood, Secretary of the recently organized North Carolina State Board of Health, invited Dr. MacFadyen to represent the board activities in Haywood County, which he did, thereby becoming the first health official of the county. A few years later, when the railway construction had been carried some miles west of Waynesville, Dr. MacFadyen accepted an appointment as physician to the convict forces hired from the state by the R. & D. R. R. Co. for road construction. In this way he became early identified with the forerunner of the present great Southern Railway System, serving for several years under that prince of fine old gentlemen, Dr. George Ross, of Richmond, Va., long Chief Surgeon of the R. & D. R. R. His service with the organization was continued under the present distinguished Chief Surgeon of the Southern Railway System, Dr. Wm. A. Applegate of Washington, D. C.

Dr. MacFadyen did a general practice, and was known far and wide in the mountain section which was his home for so many years. It was well known, by his neighbors and clientele, during the period of his professional activity, that the weather was rarely too inclement, the night too dark, the distance too great, or the mountain road or trail too rough, for the doctor to respond to almost any and every call received; and it was generally an accepted fact, particularly among the humbler classes of his patients, that if he was at home they would be certain to secure his services. He worked hard and long hours, as only a man endowed with a superb physical endowment, associated with an earnest desire to serve humanity, could or would have done. Literally and truly was it said of him in his life that, had he received compensation for all the work he did for the sick and afflicted, he would in all probability have acquired the largest financial competency of any physician in the section where he lived; but avariciousness was foreign to his nature, while a kindly generosity and sympathy were a strongly ingrained part of his spiritual make-up. So he lived, and so he died, a fine exemplification, in real life, of the patient, trusting, helpful type of general practitioner, combining physician, obstetrician, pediatrist, etc., all in one body and mind, and that one animated with the belief that it was his duty and his mission to minister to mankind, whenever and wherever needed, alike with his time and his substance.

A life-long Democrat in politics; surgeon, from its organization to his death, of the local Confederate Veterans' Camp at Waynesville; and firm in his conviction of the correctness of the principles upon which the attempt had been made to found a new nation in the South based on the finer ideals of the original United States of America, he was yet most tolerant and kindly in his attitude toward those differing from him in politics, and on more than one occasion, even when party lines were strongly drawn, evinced his appreciation

of those of opposing party belief by supporting for office candidates of the opposite political party. He affiliated with the Haywood County Medical Society on its organization in 1888, continuing a member to his death.

He was a member of the Presbyterian Church, and an ardent believer in its doctrines; a Master Mason who was ever ready to respond to the call of the craft; a citizen with high ideals; a kindly man, a friendly neighbor; and one whom his acquaintances, effacing any foibles, will ever remember as one who comforted and helped humanity and literally "laid up treasure in heaven, where moths do not corrupt nor thieves break through and steal." During the last few years of his life he became blind, and thus incapacitated for performing the duties of his profession. While he keenly felt this as a great affliction, he never lost his cheerful spirit, and, enjoying a fair degree of general health, and sanguine in mind, he soon learned to walk about the streets, coming and going the mile uptown from his home, unaided and unafraid. His figure, slightly bent with years, coupled with some degree of uncertainty in step, became a familiar form at the post office around mail-time, where he was daily seen, recognizing by their voices the friends of former years, and ever having a cheery word for those who stopped to address him.

His end came peacefully, painlessly, and unexpectedly. Late one afternoon in February, he had visited the poultry yard and collected the eggs, his daily habit, when returning from a long walk about the town. He expressed himself, on coming into the house, as being tired, and stated he would rest a little before dinner was served. A little later, when called to his meal, he was found lying on the lounge, features quiet and composed, but his spirit had departed, returning to the God from whence it came, and the earthly places that knew this kindly man, who loved his fellow man, will know him no more.

Surviving Dr. MacFadyen are his devoted wife; a son, Frank, residing in Detroit, Mich.; a daughter, Christobel, the wife of Mr. J. T. Bailey, Canton; a daughter, Mary, wife of Mr. J. L. Ellwood, Detroit, Mich.; a daughter, Amelia, residing in Washington, D. C.; a son, Henry, who served during the World War with the American forces and attained the rank of captain of infantry, now living at Asheville; and a daughter, Louise, living with her mother in the old home at Waynesville.

GILBERT McLEOD, M. D.

Doctor Gilbert McLeod, one of the most beloved and highly respected citizens of Moore County, died February 1, 1925. He was born in Moore County. His pre-medical education was received at the University of North Carolina, and he graduated in medicine from the University of Maryland in 1882. He began the practice of medicine at Morven, in Anson County, where he remained four or five years. He then moved to Carthage, where he spent the remainder of his life as an active practitioner.

In 1885 he married Miss Sallie Cole, who survives him.

Doctor McLeod was a member of the Odd Fellows. He belonged to the Presbyterian Church, being an elder of that organization. He also served several years as county coroner and was a member of the board of county commissioners. He was also president of the Moore County Medical Society.

He was one of the leading physicians of his county, and enjoyed a wonderful practice until within one year of his death.

GILBERT McLEOD, M. D.

BY

A. McNiel Blair, M. D., F. A. C. P., Southern Pines

Doctor Gilbert McLeod was born September 27, 1857, near Carbonton, in Moore County, in the State of North Carolina.

His father was Mr. Angus McLeod and his mother Mrs. Kate McRae McLeod, who were members of a group of early settlers in this county.

Dr. McLeod received his early education at the Union Home School, and his preparatory work and his medical courses were carried on at the University of North Carolina and the University of Maryland. He finished his medical education for the degree of Doctor of Medicine at the University of Maryland, from which he was graduated in 1882.

He was licensed to practice medicine in the State of North Carolina at Durham, his certificate bearing date of May 21, 1885, and being signed by the elder Dr. Wood, who was at that time President of the Board of Medical Examiners. Dr. McLeod became a member of the State Medical Society the same year.

The first six or seven years of medical practice were carried on at Morven, after which time he moved to Carthage, at which place he continued his practice—finishing his labors in the community which he had so long served, and which knew him so well, on the evening of February 1, 1925.

In 1885, on September 22nd, Dr. McLeod was married to Miss Sarah Cole. To this union four children were born, two sons and two daughters, all of whom survive him.

Dr. McLeod was one of the pioneer workers in the interests of good roads and good schools in this section, having served for many years as county commissioner, county health officer, and coroner. His service as coroner extended over a period of eight consecutive years.

Dr. McLeod was a member of the Seaboard Air Line Railway Surgeons' Association, and at one time this organization honored itself by electing him to the Vice-Presidency. He was an active and co-working member of the Moore County Medical Society, and at various times served as its President and Vice-President, respectively. He was also a member of the State Society and of the Tri-State Medical Association.

Right here I wish to insert an appreciation of our good friend by his pastor:—

Christianity at large, and especially the Presbyterian Church of Carthage, has sustained an inestimable loss in the passing of Dr. Gilbert McLeod, of Carthage, N. C. He had been in failing health for several years, and during the past year he had lost ground very rapidly. But no one expected the end to come so soon. On Friday morning, January 20th, he lapsed into a coma from which he never recovered fully, and immediately began to slip away very rapidly, the peaceful and triumphant end coming Sunday, February 1st, at 5:15 p. m.

As a citizen, Dr. McLeod was respected and honored by everybody. He was interested in every forward step for the betterment of the community. As a physician, he loved his profession and always approached his work from the standpoint of helping people and relieving suffering, going whenever he was called, regardless of pecuniary remuneration, and in his last days at a tremendous cost of strength, and really life itself. He gave his life to the people.

As a friend, he was one of those great souls that bless you by simply coming in contact with them. He was true, loyal, faithful, constant; to know him was to love him.

As a husband and father, he was faithful, loyal, congenial, thoughtful, provident. He was lenient and reasonable in his demands, yet firm. He was one who ordered his house well.

As a churchman and Christian, he had no superiors and few equals. Christianity was the first and most important thing in his life. He was for years a ruling elder in the Presbyterian Church here, and at his death the senior elder. He was never too busy to talk about his Christ and his church. As long as he had the strength he was always in his place at every service. And he has been missed, oh, so much, and will continue to be missed. But "He being dead, yet speaketh," for "the righteous shall be held in everlasting remembrance."

We all—for everybody was his friend—heartily sympathize with his loved ones in their bereavement, for their loss is our loss, too; but our loss is his gain.—His Pastor.

Dr. McLeod's prompt response and willingness always to meet every demand, his loyalty and conscientiousness, and untiring interest in his work and in the people whom he loved and served, were deeply appreciated by the writer in the days when we worked together in the County Society and in the Fifth District. The friendship of twenty years grew to real love.

May I use the words of Sam Walter Foss in closing this tribute to Dr. Gilbert McLeod, who was a "friend to man."?

"Let me live in a house by the side of the road, where the race of men go by—
The men who are good and the men who are bad, as good and as bad as I.
I would not sit in the scorner's seat, or hurl the cynic's ban;
Let me live in a house by the side of the road, and be a friend to man."

GILBERT McLEOD, M. D.

EULOGY PRESENTED BY THE FIFTH DISTRICT MEDICAL SOCIETY

Dr. Gilbert McLeod was born in Moore County, North Carolina, on September 27, 1857, and was the son of Angus and Kate McRae McLeod.

He received his preparatory education at old Union Home School; his literary education at the University of North Carolina; and his medical education at Maryland University, where he graduated in 1882. He was licensed and became a member of the North Carolina State Medical Society in 1885. He practiced his profession at Morven, Anson County, for four or five years, then moved back to Carthage, where he remained to the time of his death, which occurred February 1, 1925. In 1885 he was married to Miss Sallie Cole, of Moore County, and to them were born four children, who survive him: Miss Katie Lee McLeod, of Richmond, Va.; Miss Bessie McLeod, of Carthage; Mr. Thomas Cole McLeod, of Richmond, Va.; and Mr. Gilbert McLeod, of Fayetteville. He was for many years superintendent of the Presbyterian Sunday School and a ruling elder, and prominent in his church courts, having represented Fayetteville Presbytery as delegate to the General Assembly at Fort Worth, Texas. He was honored by his fellow citizens of the town and county by election to various offices, having been mayor, county commissioner, and coroner for repeated terms. Though a Democrat, he had the unique distinction in one campaign of having received every vote but one cast in the county, and, as he quizzically remarked, "with a vote like that, if he was not elected, it would be a lasting disgrace upon the county."

In his home he was kind, affectionate but firm, hospitable and generous. As a citizen, he held the highest ideals of citizenship. As a friend he was loyal and true, ever holding up the good and trying to overlook or correct the bad. His genial, friendly ways made for him friends wherever he went, and hundreds, yes thousands, who knew him felt in his death a personal loss. While these qualities marked him as a man apart, it was as a physician he was pre-eminent—not as the brilliant specialist with lots of high priced tools and higher priced advertisements, but as the old time general practitioner and family doctor who cured folks. So sound was his judgment and so accurate his knowledge of the essentials that he seldom failed in his diagnosis, prognosis, or treatment, keeping up with the times with no apparent effort, so retentive was his mind for anything he had once read.

He answered the call of the rich or the poor, the good or the bad, the high or the lowly. He was there to greet with smiles the new arrival or to soothe with words of comfort and hope the hearts of those in whose home his bravest fight against the grim reaper had been in vain. He gave of himself to the utmost limit, nor felt that he had done too much. No night was too dark, no road too long or rough, no home too poor or lowly, if suffering called. Some one

may say this was poor business, and perhaps by our modern standards it was, but for forty years he did it; and somehow some of us don't feel that forty years' work will seem very long when balanced by an eternity of reward. And when the recording angel writes upon the pages of the book of life the names of those of the North Carolina Medical Society who trod the thorny path our Master trod, when He went about doing good, the name of Gilbert McLeod will be enrolled high up in golden characters as one who served his God and, like Abou Ben Adhem, loved his fellow man.

And, as the years go by and we grow to care less for the things that are and think oftener of the things to be, we might well lay a wreath each year upon the grave where lie the remains of this great, kind brother, and breathe a silent prayer that we too might live a life of such Christ-like unselfishness.

JOHN WALTER PAGE, M. D.

Doctor John Walter Page died at a Greensboro hospital on the morning of August 22, 1924, following a stroke of paralysis. For several years his health has been failing, and much of his time during his latter years was spent in Florida in a vain effort to regain it.

Dr. Page was born August 12, 1858, in Randolph County, N. C., the son of James and Martha Shamburger Page. Dr. Page read medicine under the late Dr. J. M. Hancock and under Dr. L. M. Fox. Following this foundation he went to Jefferson Medical College, Philadelphia, finishing there in 1879. He returned to Randolph County and for several years practiced with his former teacher, Dr. L. M. Fox. About 1890 Dr. Page moved to Alamance County, and a few years later moved to Burlington, in that county, where he continued his practice until 1920, when his health forced his retirement. Following his retirement he made his home in Deland, Florida. The professional life of Dr. Page was one of continuous success. He held for many years and up until his retirement the largest practice in his town.

Dr. Page married in 1896 Diana Upshur Kilby, of Suffolk, Va. To this union three children were born. Dr. Page was from early life a member of the Methodist Church.

L. J. PICOT, M. D.

Doctor L. J. Picot was born January 8, 1853, at Murfreesboro, N. C.

His pre-medical education was received at Buckham Academy, and he received his M. D. degree from Jefferson Medical College in 1873.

In 1874 he located in Littleton, where he practiced his profession until 1908, going in 1908 to Raleigh, where he became Assistant Superintendent of the State Hospital for the Insane. He served in that capacity from 1908 to 1911, at which time he was appointed Superintendent of the State Hospital.

Among other honors which came to Doctor Picot, the following may be mentioned: He was orator of the North Carolina State

Medical Society, secretary and president of the State Medical Society, trustee of the University of North Carolina, consulting surgeon of the Seaboard Air Line Railway, and Superintendent of the Hospital for the Insane at Raleigh.

Dr. K. P. B. Bonner, Morehead City:

I should like to add one honor that the Society conferred upon Dr. Picot which was not named in that resume. I may say without fear of contradiction that he was the most efficient secretary the Board of Examiners has ever had—a man who made no mistake, a man whose penmanship stands out and can not be mistaken. He was a member of the Board of Medical Examiners and served on the Board from 1890 to 1896.

Dr. Chas. O'H. Laughinghouse, Greenville:

It was one of the privileges of my life to know Dr. Picot. He came along with and was the close friend of Doctors George Thomas, Dick Lewis, Westray Battle, A. W. Knox, Pat Murphy, Frank Duffy, and men like unto them. My intimate acquaintance with him was made possible and came about because of an intimate friendship which existed between him and my grandfather, Dr. O'Hagan. Not long ago, in looking over some papers of my grandfather's, I came across a package of letters, the chirography of which was peculiarly Picot's. They were written in an angular, printed hand which no one but Picot could write. I do not recall having read anywhere things more beautiful than these letters of this man to his friend. They contained a love of life, a convincing faith, and a sense of humor which absolutely mellowed and brightened the drizzly, damp, cold, and cheerless days which are a part of the lives of men. In these letters there was an ideal and an ambition for the profession of medicine in this good state, which ambition and ideals, were it possible to publish them, would really be an inspiration to all men.

Dr. Picot, for some reason, got out of line with the State Medical Society. It happened at Hot Springs in 1903, when the Society federated, as did the other state societies, with the American Medical Association. Picot could not see the wisdom of it. I recall, in discussing it with him, that he was fearful lest the American Medical Association would take away the State Society's independence. He said to me on this occasion that if the American Medical Association's plan was carried he "would have no more voice in the direction and development of the State Society than would an uncircumcised Amalekite in a convention of Rabbis."

About the time he would have come back to the Society, his son, who was making a splendid reputation for himself in the theatrical world, was suddenly taken away. One domestic sorrow after another sapped what age was helping to sap, so he did not take in the latter years of his life any real, personal active interest in the Society. All of which is to be greatly regretted, because, as good as the Society is, had he remained actively with it he would undoubtedly have made it better.

A. M. REDFERN, M. D.

Doctor A. M. Redfern was born at White's Store, Anson County, N. C., March 21, 1862. He died in Charlotte, N. C., December 4, 1924. He was a graduate of Wake Forest College. He graduated from Long Island College Hospital in 1886. He practiced medicine in Chesterfield, S. C., for two or three years after his graduation.

When Clemson College was organized, he went there as college surgeon and remained there 27 years. In 1919 he resigned his work at Clemson, gave up his practice, and moved to Charlotte, where he lived until his death.

He was a member of the South Carolina Medical Society and of the American Medical Association. He was never licensed in North Carolina.

HARRY C. ROBERTS, M. D.

Doctor Harry Clay Roberts was born in Danville, Va., June 3, 1883. He graduated at Buies Creek Academy, Buies Creek, N. C.; University of North Carolina, Chapel Hill, N. C., and Tulane University, New Orleans, La.

He began practicing in Coats, N. C., December 16, 1912.

He was a member of Sudan Temple and a thirty-second degree Mason.

He died April 28, 1925, as the result of injuries received in a fall in his airplane.

Dr. Kemp P. Neal, Chairman: Since I completed my report a dear friend of mine, Dr. H. C. Roberts, of Coats, died yesterday morning. He was one of the most lovable characters I have ever known, a man who stood out in his community as a social worker, a church member, and a splendid citizen—a man who was putting one or two boys through college. He had built a little hospital there.

Dr. Roberts's great hobby was airplanes. He told me only about thirty days ago that airplane traffiic was the safest traffic there is. We urged him to give it up, but he was unwilling, because he loved it so much, and while flying on Sunday afternoon his plane fell and he was so severely injured that he lived only twenty-four hours thereafter.

HENRY B. ROWE, M. D.

Doctor Henry B. Rowe died at his home on May 16, 1924, after an illness of two years.

Doctor Rowe was born in Iredell County, June 12, 1885, the son of Doctor J. C. Rowe, deceased.

His literary education was procured at Trinity College, and he studied medicine at the University of North Carolina and Jefferson Medical College, receiving his M. D. degree from the University of Maryland.

After spending a short time practicing in Charlotte, he located in Mount Airy. He joined the army during the World War, and was assigned to duty at Edgewood, Maryland. It is thought that

an attack of influenza while there brought on probable pulmonary tuberculosis, from which he never recovered.

He returned from the Army to Mount Airy, specializing in diseases of the eye, ear, nose, and throat. He was forced to give up his practice altogether in 1922, and died about two years later.

He was a member of the Methodist Church and the Kiwanis Club, and was a Mason, and also a Shriner.

He is survived by his wife and one son.

RESOLUTIONS OF APPRECIATION OF THE SERVICES AND WORK OF FLOYD CALDWELL SHUGART, M. D.

ADOPTED BY THE GUILFORD COUNTY MEDICAL SOCIETY

Doctor Floyd Caldwell Shugart was born January 14, 1891, in Yadkin County, North Carolina. His father, Isaac Shugart, likewise was born in Yadkin County, where he followed the life of a farmer. Dr. Shugart's mother was, before marriage, Miss Emma Greenwood. Later his father moved to Jonesville, Yadkin County. Besides Dr. Shugart, there were born in the family of Isaac Shugart two sisters and a brother, all of whom survive. They are Mrs. W. E. Woodruff, Mount Airy; Mrs. N. A. Melton, Hendersonville; and Mr. Will Shugart, Jonesville.

Dr. Shugart received his primary education in the public schools at Elkin, after which he prepared for college at Mars Hill. He graduated at Wake Forest College in 1913 as a bachelor of science in medicine, and after this received his degree as doctor of medicine at Columbia University in New York City, in 1915. Desiring to equip himself thoroughly for his life work, he followed this excellent training with eighteen months of intern service at the Orange Memorial Hospital in Newark, New Jersey.

His country having declared war against Germany, Dr. Shugart promptly responded by joining the medical reserve corps of the army in May, 1917. On July 18, 1917, he was received in the regular army as a lieutenant in the first volunteer ambulance company, which was organized at Greensboro. He did not remain with this company, but was given training at the War College in Washington, and placed in the camp surgeon's office at Camp Zachary Taylor, Louisville, Kentucky. Here he served until his discharge from the army, September 8, 1919.

Dr. Shugart's life in High Point and Guilford County began shortly after his release from the army, in October, 1919. He rapidly built up a large general practice, and devoted himself faithfully and assiduously to it until his brief and fatal illness two months ago. His office was in a suite jointly occupied with Dr. W. J. McAnally. He was an active member of the staff of the High Point Hospital. Among his professional associates and his patients he was held in highest esteem and affection.

Very early in his life Dr. Shugart became a member of the Baptist Church, and some of his closest personal friends were minis-

ters of this and other denominations. He was also a member of the Elks and of the Masonic lodge; a charter member of the Andrew Jackson Post of the American Legion; and a member of the county, state, and national medical associations.

Dr. Shugart's life had resolved itself into a great love for his home, his work, and the general progress of his profession and mankind. In 1920 he was married to Miss Grace Tatum, of Davie County, whom he had known since early youth. To them was born on March 15, 1922, their son, Richard Caldwell Shugart.

During the last few months of his life Dr. Shugart gave much thought to the erection of his home. Only four days after moving into this home, he was taken with a severe attack of pneumonia, to which he succumbed a week later, May 30, 1924.

Those who knew Dr. Shugart realize the great general loss occasioned by his death. He was one of the best natured of men, always full of cheer for his patients and co-workers. There was not a mean thing about the man. Cut down in the early part of a career full of promise, his close friends realize that in his few years of practice he had just completed, in the practice he had built and the home he had established, the foundation upon which he had long hoped to build a superstructure of more general activity in his medical society and in civic and fraternal life.

Whereas, We, as the Guilford County Medical Society, and individually, know that we have lost one of our most beloved and promising members, and that his place in our hearts is permanent; and whereas we feel that he he has stood for all that is highest in the medical and surgical world, always ready to defend the right and standing by to give help where needed; *therefore*

Be It Resolved That a copy of our resolutions be placed in the permanent records of this society, and that a copy be sent to the members of his family.

W. J. Meadows,
W. P. Beall,
H. L. Brockmann,
Committee.

F. C. SHUGART, M. D.

Dr. Harry L. Brockmann, High Point:

Doctor Floyd C. Shugart was associated in the High Point Hospital with Dr. J. T. Burrus and myself, Dr. F. G. Woodruff, Dr. W. J. McAnnally, Dr. O. B. Bonner, and others. Dr. Shugart died at the age of about thirty-three, after a sickness of only one week with pneumonia. Just before he became sick he was probably doing the hardest and most interesting work of his life. He had just completed a new home and moved into it, and was just preparing to launch upon life. He was a dear friend of all of us, and very highly thought of by all. He graduated from the College of Physicians and Surgeons, New York, in 1917. He went into the army during the war and then, after doing some post-graduate work, settled in High Point. He leaves with us one son, a chap about three years old now, and his wife.

Dr. I. T. Mann, High Point:

While I was not intimately associated with Dr. Shugart in his hospital work, I wish to say a word or two about this deceased brother of ours, as representing the members of the staff of the Guilford Hospital. He was small in stature but large in heart, and he left a host of friends who still mourn his departure. He was a man who endeared himself to the entire profession in High Point and Guilford County and throughout the state.

FREDERICK L. SILER, M. D.

Doctor Frederick L. Siler, of Franklin, died June 7, 1924.

Doctor Siler received his medical degree from the University of Nashville in 1897, and joined the State Medical Society in 1903.

In 1922 he was elected president of the Macon-Clay County Society. He did a great deal to increase interest in this society, in broadening its activities.

Doctor Siler was a leader and took an active part in all civic, religious, and philanthropic movements for the betterment and uplift of humanity. Typical of the old school physician, he gave his life in an effort to relieve the suffering and burdens of humanity.

REMARKS AND RESOLUTION PRESENTED TO THE TENTH DISTRICT MEDICAL SOCIETY, SEPTEMBER 24, 1924

By C. C. Cotton, M. D., Asheville

Gentlemen of the Society:

It is eminently fitting that, when one of our number slips away to that "undiscovered country from whose bourne no traveler returns," we should pause in our deliberations and reflect on the character and life and influence of the one who has finished his work among us. Dr. Frederick L. Siler passed through that mysterious change that we call death on June 7th of the present year. His passing was, indeed, as we all appreciate, a shock to his fellow workers and the community in which he had done such loyal, unselfish and skilful service, for the betterment, the enlightenment and the happiness of his fellow man.

This Society selected him for its President for the year 1922—a wise selection that brought increased prominence and influence to the society and increased its usefulness and help for the sick.

Dr. Siler was a leader and took an active part in all civic, religious and philanthropic movements that had for their object the betterment and uplift of humanity. It is needless for us to recount here the many acts of kindness and cheer, helpfulness and encouragement, that he has given to others. These are enshrined in the hearts of those whom he helped and can be neither added to nor detracted from by any words we may say here. His life seems to have been an embodiment of the following lines of William Cullen Bryant:

"So live, when thy summons comes to join
The innumerable caravan that moves
To that mysterious realm where each shall take
His chamber in the silent halls of death,
Thou go, not like the quarry slave at night
Scourged to his dungeon, but, sustained and soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

It is customary and fitting that we should pass suitable resolutions on the death of a brother—not that it matters one iota to him, nor that we can or wish to change the record of his life, but that the influence of his life for good may remain in the memory of the living. What frailties he may have had (for being human he must have had some) with implicit faith and trust we let "rest upon the bosom of his Father and his God."

I therefore offer the following resolution:

Resolved, That in the death of Dr. F. L. Siler this Society has lost an able, conscientious, skilful, and true physician—a doctor of the old school, whose whole life-work and endeavor was for the relief and cure of suffering humanity.

Resolved, That a copy of this resolution be spread upon the minutes of the Society and that a copy be sent to the family of Dr. Siler.

M. R. STEPHENSON, M. D.

Doctor Matt Ransom Stephenson, of Seaboard, N. C., died October 23, 1924, of angina pectoris.

He received his M. D. degree from the University of Maryland Medical School in 1881.

He had practiced in Seaboard many years and enjoyed a splendid practice.

He was chairman of the county board of health, and an active member of his county medical society.

J. H. TEAGUE, M. D.

Doctor J. H. Teague, of West Asheville, well and favorably known in Haywood County, where he was born and reared, died August 15, 1924, at his home, in the seventieth year of his life.

Doctor Teague married Miss Melissa Henry, of Haywood County To this union there were born eight children, four of whom are living.

He practiced medicine around Shoal Creek and Whittier for about thirty years. About four years ago he moved to Sevier County, Tenn., and a little later to West Asheville.

Doctor Teague was an active member of the Methodist Church. He was highly respected and loved by all who knew him. He was buried at Whittier August 17, 1924.

H. M. WILDER, M. D.

Doctor Hillory Madison Wilder was born January 16, 1851, at Wilder's Grove, in Wake County. He was the son of Col. Hillory M. Wilder and Esther Avery Wilder.

Dr. Wilder studied under private tutors, as was the custom in those days, afterwards entering Wake Forest College. He later went to the University of North Carolina, where he remained until the unfavorable conditions after the Civil War caused him to go to Davidson College.

Leaving Davidson College, he "read" medicine under Dr. E. Burke Haywood of Raleigh, subsequently entering the Medical College of the University of New York, where he graduated in 1872. He took post-graduate work at Guy's Hospital in London, serving for a time in the British Merchant Marine on a trans-Atlantic steamer.

He then settled in Wake County, where he practiced from 1873 to 1876. In 1876 he married Sarah Demarius Worsham, of Charlotte, N. C., and moved to Charlotte to make his home.

He was soon elected county physician, and held that position for twenty years. He formed the first Board of Health of Mecklenburg County and City of Charlotte.

Dr. Wilder was the first medical man to be sworn in the North Carolina Volunteers when the Spanish-American War broke out, receiving the commission of Major Surgeon. He went to Cuba with the first of the American Army. Prior to the Spanish-American War, Dr. Wilder had been surgeon of the 4th North Carolina Infantry National Guard, serving in this capacity for ten years.

After the war he returned to Charlotte, taking up his practice there. It was he who was largely instrumental in founding Mercy Hospital.

In addition to numerous other honors conferred upon him, Doctor Wilder was elected to the American College of Surgeons, and was for a number of years Chief Surgeon of the Seaboard Air Line Railway in Charlotte.

He did the major portion of the surgery in the Carolinas and adjoining states in the days before hospitals were so numerous in the South.

Doctor Wilder was for years a leading factor in the Mecklenburg County Medical Society. He completed a half century of practice of medicine and surgery in North Carolina, dying June 15, 1924, in Charlotte.

JOSEPH E. WILSON, M. D.

Doctor Joseph E. Wilson died at his home at Woodrow, North Carolina, of heart disease, on February 15, 1925.

Doctor Wilson was a native of Haywood County, residing there all his life. He was born July 21, 1857, at Bethel, N. C., the son of Captain W. J. Wilson and Mary M. Cathey.

He attended public and private schools and studied medicine at Waynesville, N. C., under the tutelage of Doctors Hugh Rogers and

Horace N. Wells. In 1879-80 he studied at Louisville Medical College, returning to Haywood County in 1881.

He was always interested in education, being a faithful member of the county board of education, and for several years was chairman of the county board of health.

He was a member of the M. E. Church, South; and an active member of Sonoma Lodge No. 472, A. F. and A. M.

Doctor Wilson was of the old school type, dearly beloved of all his county people, and held a place in their hearts which cannot be filled.

JOSEPH EDWIN WILSON, M. D.

BY

J. Howell Way, M. D., Waynesville

Doctor Joseph Edwin Wilson was a native and lifelong resident of Haywood County, N. C., and a fine illustration of the splendid characters so frequently seen among the natives of the Southern highlands. Born of the best blood of the mountains, living his days out within a few hundred yards of the site of the ancestral home where had resided no less than four generations of his family, he exemplified in high degree the best traditions and personal traits of the mountain peoples, and exhibited in small measure their few faults. The son of Captain William Jesse and Mary Minerva Cathey Wilson, born at the Forks of Pigeon, July 27, 1857, he received by inheritance the tendencies that mark the man of good birth. His father was an educator whose influence for uplift was felt far beyond the generation in which he lived, in this and adjacent counties. His maternal great grandfather, William Cathey, was an original white settler of the Pigeon Valley, and a man of great strength of body and mind; while his grandfather, Col. Joseph E. Cathey, was easily, for a full generation, one of this section's foremost citizens, who, honored and respected of all men, served as state senator, and was a member of the North Carolina State Constitutional Convention of 1835, taking high rank in that body of Carolina celebrities with Macon, Graham, Gaston, Badger, Bragg, and other famous citizens who composed that important council.

Young Wilson's life was that of the usual farm lad of his station in life in the mountains prior to the coming of the railways, and he received such educational advantages as were offered by the local schools of Haywood County. Completing the available courses of study, he entered a store in Waynesville, as a clerk. Soon after this he began the study of medicine under the preceptorship of Drs. H. M. Rogers and H. N. Wells; later attending medical lectures at the Louisville Medical College during the session of 1879-1880. He immediately began the practice of medicine in his home community at Forks of Pigeon, continuing his work in that capacity until a short while before his death on February 16, 1925.

On September 20, 1881, he was married to Miss Cordelia Mann, a native of his own community and a gracious, kindly woman, who became in every sense of the term a help-meet to the young coun-

try doctor, whose practice covered a large territory chiefly populated by poor but appreciative persons. During practically the whole period of Dr. Wilson's professional life he was the only medical practitioner available, under ordinary conditions, to the inhabitants of two large rural townships, and it is truthfully said of him that he appreciated his responsibilities and met them ever with a purpose to serve to the best of his ability. Of kindly mien, gentle and sympathetic in manner, modest and retiring almost to an extreme, he never assumed a knowledge of conditions he was not reasonably assured of, and was a frequent caller of consultants from the towns of the county, whose physicians without exception always held him in the highest esteem and regarded him as one of the county's most capable and conscientious workers in the profession of medicine. Like most rural physicians in North Carolina, he was a man of pronounced political convictions, a straight party voter of Democratic party affiliations, and always striving to wield his influence locally alike for the good of his party and the community where he resided so long. It is superfluous to note that the support of Dr. Wilson was always sought by candidates for office, who recognized that usually as his influence was exercised, so voted a majority of the two big townships which were the scene of his activities.

An earnest and consistent member of the Methodist Episcopal Church, South, his concern in religious affairs was greater than that of the average rural physician, taking as he did a most active interest in every phase of the church's work and the religious life of the community. For many years he served as church steward, Sunday School teacher, and superintendent, while his kindly personality and his hospitable home early and persistently contacted every new preacher sent to his charge. He was a thoroughly consistent Free Mason and at all times and in every way practiced its God-like tenets and promoted its prestige. He served as county physician for many years, and also as member of the county board of education, filling each position, as he always did places of responsibility and trust, with honor to himself and in the true spirit of sacrifice toward those he served. He became a member of the Haywood County Medical Society at its organization in Waynesville in 1889, and when the State Medical Society was re-organized in 1903 he became affiliated with that also, continuing in fellowship to the day of his death. He was also president of the Haywood County Medical Society at different times, and carried through an active professional life the respect and friendship of every physician who knew him.

The end of his earthly activities came at his home peacefully from an organic heart lesion, after an illness of a few months, during which his kindly clientele had given much evidence of appreciation and affectionate regard. The following day his body lay in state in the rural chapel on the hill-top overlooking the beautiful Valley of the Pigeon where he had labored so long and faithfully, with the friendly height of Pisgah looming high only a few miles

away, and for several hours hundreds of rural folk from far and near, sorrowing and with tear-stained faces, took their final look on the face of the good honest man, the country doctor who had been their lifelong friend and support in many, many trying days and nights. He was buried with full Masonic honors, a large attendance of the craft from each of the four lodges of Masons in Haywood County participating. The membership of the Haywood County Medical Society also attended the exercises.

Surviving Dr. Wilson are his devoted widow and two daughters, Gertrude, the wife of Mr. Oscar J. Coffin, editor of *The Raleigh, N. C., Times;* Inez, the wife of Prof. A. Dixon, of the North Carolina State College, Raleigh, and one grandson, Edwin Wilson Coffin, also of Raleigh, N. C. Two brothers, William Wilson, of Haywood County, and Arthur R. Wilson, of San Saba, Texas, also survive him.

In his passing to life eternal, Joseph Edwin Wilson, physician, friend, citizen, Mason, leaves the record of honest, capable doctor; loyal, helpful friend; patriotic citizen; Mason consistent with the highest teaching of the noble craft; loving, devoted husband and father, and a man whose memory will ever linger with those who knew him as truly faithful and trustworthy in every phase of an honored and useful life.

Dr. Albert Anderson, President:

In the tribute paid Dr. Wilson by others, I am reminded of a very fine tribute paid to this good doctor by Judge W. A. Hoke. He knew him well and said that his mind was well trained as a doctor, but his heart was sympathetic for those that suffered, and he was always on the lookout for the prevention of disease—in short, he was a high type of the old-time practitioner.

Dr. Chas. O'H. Laughinghouse, Greenville:

It has always been a serious purpose and habit of mine to attend the report of the Committee on Obituaries. There is no history but biography. A man who sits and thinks when the Obituary Committee makes its report gets something out of the report of the Obituary Committee that he can take home with him and that will do much to make him cleaner, better, stronger, and more useful. I have been attending these obituary committee reports for over twenty-five years, and I have never seen that committee discharge the duty for which it was appointed quite so well as it has been discharged by Dr. Neal tonight. I think the thanks of the State Society are due Dr. Neal, and I want to make a motion that this Society express its appreciation to him for his thorough way of making this excellent report. Motion carried.

Dr. L. B. McBrayer, Secretary:

I certainly share fully the feeling of Dr. Laughinghouse, and thank him for the remarks he has made in regard to the report. I move that we receive this report, and authorize the Chairman to add such things as he may desire.

President Anderson:

Without objection, that will be done.

MEDICAL LAWS AND LICENSURE, WITH SPECIAL REFERENCE TO OPERATION IN NORTH CAROLINA

K. P. B. Bonner, M. D., Morehead City
Secretary of the State Board of Medical Examiners

The systematic teaching of medicine in America antedated legal regulation of the practice of the same by over a half century. The first organized classes or demonstrations were probably held in Philadelphia in 1750, and from these developed the first medical school in America, the Medical Department of the University of Pennsylvania. The second medical school was established in 1768 in New York, the Medical Department of King's College. In 1783, the Medical Department of Harvard University was established at Cambridge, followed by the establishment of the Medical Department of Dartmouth College in 1798. It is significant that, of these four pioneer schools, three are still in existence and teaching medicine under the original name. The Medical Department of King's College collapsed on the occupation of New York by the British during the Revolutionary War and was indirectly revived by union with the College of Physicians and Surgeons, now the Medical Department of Columbia University, in 1814, which itself was founded in 1807 by the Regents of New York.

From this modest beginning, institutions for the teaching of medicine rapidly developed until the United States and Canada have produced, to the present time, four hundred and fifty-seven. As the number increased, the quality of teaching as a whole deteriorated in the same proportion. In the presence of keen competition, scholarly ideals were soon compromised and then forgotten. In 1910, at the time of the publication of the report of Mr. Abraham Flexner on Medical Education in the United States and Canada to the Carnegie Foundation for the Advancement of Teaching, there were one hundred and fifty-seven medical schools in operation. This report revealed the deplorable condition of medical education in this country and Canada, pointed out the wide divergence of curriculum in the schools, the variation in preliminary educational requirement for admission, and the frank commercial aspects of many institutions. This report and disinterested study was very largely responsible for a complete reorganization of medical schools in America. About the same time the Council on Medical Education and Hospitals of the American Medical Association worked out a system of grading and classifying medical colleges. This body has exerted no small influence in standardizing medical education and placing a high premium on excellence of teaching. Today only ninety schools survive, of which all but nine are located in the United States. With the reduction in number has come a corresponding improvement in standard of educational requirement preliminary to admission to the study of medicine, as well as standardization of medical teaching itself. Of the ninety schools, all but

eleven are rated as Class A by the Council on Medical Education and Hospitals. Of the eleven not rated as Class A, seven are rated in Class C, as being wholly unacceptable, and four could be raised from B to A with only minor changes.

New York enjoys the distinction of being the first state in the Union to enact laws regulating the practice of medicine, in 1806. It was not until 1825 that the next state, Georgia, saw fit to pass laws similar in nature. North Carolina was third, and our laws became operative in 1859. Other states gradually followed suit, and it is surprising to note that in many states the original laws controlling the practice of medicine were enacted after the beginning of the twentieth century.

It is of more than passing interest, in a study of medical practice laws of the various states, to note that the original laws seem to have been passed with the main idea of protecting the medical profession, at the behest of physicians, rather than from a motive of protecting the public against incompetents, pretenders and quacks. Early medical laws bear all the earmarks of special favor, or class, legislation rather than an exercise of an inherent state right of police powers. The general public attitude at that time, less so at present, had a tendency to accept at face value the claims of any quack or impostor as to curative powers, no matter how absurd the basis of their claims, no matter how preposterous or unscientific the methods. Public sentiment was sympathetic to any one laying claims to skill in the treatment of human ailments, be they general or special in scope. This explains, to a great extent, the difficulty of enforcing medical practice laws. The general impression seemed to prevail that these laws were designed by regular physicians for the regulation of themselves, but in no sense of the word were the provisions of the law to extend to uneducated unlicensed practitioners. The peculiar mass psychology was that it was inherently just for any person to be permitted to relieve and cure human suffering whether licensed or unlicensed, law or no law. The sentimental element ruled on account of the humanitarian aspect, and, in the predomination of sentiment, sight was completely lost of the fact that, in the majority of cases, the pretender possessed no peculiar skill other than that of enriching himself at the expense of human suffering. Nothing is more contemptible than the capitalization of human ailments, wherein the material wealth of the individual is advanced out of proportion to the benefit he is able to render.

As the years went by the lawmakers of the various states gradually awoke to the fact that the public was the greatest beneficiary of the laws, that medical laws were very essential to the public welfare, that uneducated quacks were positively dangerous to human life, and that laws were necessary containing provisions so strong that no loopholes might be found through which a shrewd and unscrupulous quack might slip. The lawmaking bodies came to the realization that no person should be permitted to assume respon-

sibility for the health and life of the sick man unless specially fitted by years of study and training in schools established for the sole purpose of teaching medicine. Upon the recognition by the law-makers of the vital importance of special medical training for the practice of medicine, there immediately followed the realization that it was equally important that a person, before entering into the study of medicine, should possess a certain degree of preliminary education in order to be able to intelligently study and completely assimilate the sciences entering into medicine. Every state in the Union now legally requires that the applicant for license must have secured the M. D. degree from a medical college before being admitted to the examinations, except Colorado, and this state has a high preliminary educational requirement that is enforced. Only two states make no provisions for a preliminary educational requirement prior to the study of medicine, the District of Columbia and Massachusetts, and these same make no distinction between medical colleges whatever the quality of instruction given. You can readily appreciate the result of such a course, these states serving as dumping-grounds for the uneducated and poorly-trained physicians refused admission by other states. The states with high standards dare not lower them on account of the certainty of joining the small minority that are forced into this extremely undesirable position.

In the natural process of reasoning it appears that the initiative in fixing standards of preliminary and medical education should have been taken by the various general assemblies of the states in their capacity as protectors of the public. It will surprise you to learn that this movement was made by the medical colleges themselves, and recognition of the necessity of these steps was forced upon law-making bodies. It is to the undying credit of the Association of American Medical Colleges that these changes were voluntarily made. Aside from the District of Columbia and Massachusetts, which make no attempt to fix an educational standard, all other states make some provisions in the law. Delaware, Missouri, Nebraska, Nevada, and Ohio require that the applicant shall have had at least a high school education preliminary to the study of medicine. California, Connecticut, and Pennsylvania require at least one year of pre-medical college work. All other states require a minimum of two years' college work before entering the medical course.

It is pleasing to note the contrast in the training of the young men now coming up for license and those who applied for license just a few years ago. Each year shows an improvement, in particular among the men. The confident bearing that accompanies a thorough training is impressive from the first appearance of the applicant, and only a good preliminary education makes this possible. A former member of the Board of Medical Examiners of this state reports that in 1915, when applicants were indiscriminately admitted to the examinations, it was not infrequent that applicants spelled cow k-o-w and cat k-a-t in examination papers. He stated further that it was exceedingly difficult to read the papers, not only on

account of the poor spelling, but on account of illiterate penmanship. And yet a graduate of the University of North Carolina led the fight in the General Assembly in 1899 against a bill that would have raised the educational requirement preliminary to the study of medicine on the grounds of the "poor boy" plea, and defeated it. This educated legislator entirely forgot, in the sentimental side of the question, that it was just as important that the poor boy be trained to the point that he was safe to be turned loose upon the public as the rich man's son. He ignored his public responsibility in his sympathy for the individual.

The gradual evolutionary stages through which medical laws have had to pass in attaining the present degree of effectiveness comprise a most interesting study. Strange to relate, legislators have been more than reluctant to strengthen existing laws governing the practice of medicine in such a manner that the public would be protected against incompetents and quacks. On account of this fact, it has always been necessary for physicians to take the initial steps in medical legislation; the very last ones you would imagine to do such a thing. Visualize a body of men so self-sacrificing and considerate of public good as to impose additional requirements and higher standards of education upon themselves. As a result of this, the enactment of stricter laws has always been difficult, for it is only human that man should question the motive of man and fail to recognize that humanitarian impulses may have prompted the act. Enactment of effective medical practice laws has been a slow and tedious process.

Perhaps to gain the clearest idea of how slow the process of medical legislation really is, it will be well to enter into a brief study of the history of medical legislation in North Carolina, as typical of the experiences in other states. Sixty-two years were required, from the passage of the first act to the enactment of the last, to reach the present standard of medical licensure in North Carolina. The original act incorporating the State Medical Society and creating the Board of Medical Examiners of the State of North Carolina was passed by the General Assembly and became operative April 15, 1859. The act provided for a board consisting of seven members to be elected by the State Medical Society for a term of six years. After reciting that all persons who engaged in the practice of medicine in the future must first obtain a license from the Board of Medical Examiners, the entire act was practically nullified by the specific provision that if a person did practice without a license, he would not be guilty of a misdemeanor. The only privilege enjoyed by licentiates of the board created was the right to sue for services rendered; a right denied the unlicensed. The original act was woefully defective in many respects, perhaps the two most fatal defects being the absence of a definition of what constituted the practice of medicine and the presence of the fee and reward clause. It was not until the enactment of the last amendments to these laws, sixty-two years later, that these defects were cured, and in the interval the board experienced many bitter reverses in

attempts to enforce the laws in the courts of the state. There was a general feeling among the profession that the Supreme Court was unfriendly to the legal regulation of medical practice, when as a matter of fact the court was only interpreting the law as written. The trouble was that the law was lacking.

The laws were amended by the General Assembly of 1871. This amendment was a minor change, whereby the time of the sessions of the board was fixed as the same time and place of the meetings of the State Medical Society. Previous to that time sessions were required to be held alternately in Raleigh and Morganton.

The General Assembly, in a way, repudiated in 1881 its own act of 1859 by the enactment of a statute providing that all physicians who held a diploma from the medical college dated prior to January 1, 1880, might practice without obtaining license from the Board of Medical Examiners. It is evident that the General Assembly purposed that there should be no question as to the right of these unlicensed men to practice, as the law as in force at that time did not make licensure obligatory in any sense of the word.

The General Assembly of 1885, on February 23d, enacted a very important amendment to the medical laws, by striking out the provision that no person who practiced medicine without a license would be guilty of a misdemeanor, and inserting a clause specifically providing that failure to obtain license before practice would constitute a misdemeanor. In an evident spirit of caution, the same General Assembly assured that unlicensed practitioners might not be molested as a result of this amendment by enacting another law a few days later, March 7th, providing that the law should not apply to physicians who held a diploma from a medical college dated prior to January 1, 1880.

The amendment of 1889 was a most important one. This act was another such instance of back-tracking as seen before. It required that every practicing physician in North Carolina should register with the clerk of the superior court in the county in which he practiced. Three classes of physicians were permitted to register; those holding a license from the Board of Medical Examiners; those in possession of a diploma from a medical college dated prior to March 7, 1885; and any person who made oath that he had practiced medicine prior to March 7, 1885. In this law you will note a further indulgence on the part of the General Assembly in extending the time limit to the unlicensed graduates of medical colleges to March 7, 1885, and the wholesale inclusion of any person making claim to medical practice prior to the passage of the law in which it was made a misdemeanor to practice without a license. The time limit set in which such registration was permitted was January 1, 1890, and hundreds failed to take advantage of the opportunity to register as required by law. The lawmakers were very indulgent in this particular, however, for in a subsequent revisal of the statutes the specific time limit was left out, and, as a result, men registered under oath of practice prior to 1885 as far along as 1921, or until

the law was amended so that only licentiates of the board were permitted to register.

The General Assembly of 1899 passed an amendment whereby the board was prohibited from admitting any person to the examinations unless a graduate of a medical college requiring at least three years of study. Prior to that time, the board was compelled to admit any one who cared to take the examinations, and in many cases non-graduates held licenses to practice medicine in North Carolina.

In 1907, the General Assembly made provision whereby it was possible to license without examination physicians licensed in other states. Prior to this time it was not possible for the board to license any one unless he had taken the regular written examinations. As a result of this lack of law, many eminent men coming to North Carolina were compelled to place themselves in the rather undignified position of writing examinations along with students just out of college. Perhaps the most notable instance of the inconsistency of such a law occurred in 1895 in the case of Edwin Klebs, co-discoverer with Loeffler of the exciting organism of diphtheria and known the world over for his eminence as a physician, who was required to take the examinations of this board when he came to North Carolina from Germany with an idea of locating permanently in this State.

The General Assembly of 1909 enacted the law permitting the board to grant limited license, to physicians whose education was not sufficient to permit of passing the regular written examination, to serve in isolated and remote sections of the state that would otherwise be without any sort of medical service. This law has been very effective in preventing the passage of special licensing legislation since that time, a matter of frequent occurrence previously. In the exercise of the powers under this statute, the board has always been very conservative, and the needs of the community are considered rather than the desire of the individual to be granted the privilege of practice. The burden is always thrown on the applicant to show the need of medical service in the territory for which license is requested, and he is required to present petitions from a representative number of the population resident therein showing that not only is medical service needed but that the particular service of this applicant is desired. Almost without exception, all applicants in the past have been endorsed by the practicing physicians in the immediate surrounding territory.

In 1915, the General Assembly made some very important and far-reaching changes in the Medical Practice Act. The law was changed in such a manner that the sessions of the board were held independently of the meetings of the State Medical Society, and it fixed the principal annual session of the board in the city of Raleigh. Provision was made that applicants might take the examinations in two halves, thereby making it possible for a medical student, upon the completion of the first two years in medicine, to come up and take the examinations on these branches. Authority to prosecute

for violations of the Medical Practice Act was vested in the Board of Medical Examiners through the office of the Attorney General, and the board was empowered to employ special counsel to assist in prosecutions of violations of the law. In the same law the standard of medical education was changed from that of a three years' course to four, and a clause in the statute provided that the applicant must have graduated from a medical college approved by the board. This gave the board quite large discretion in passing upon the acceptability of the college, a power not heretofore enjoyed. This has made possible the securing of a higher type of physician for the state and has elevated the general professional average.

In 1921, the general and special sessions of the General Assembly made many important and long needed changes in the law. The temporary license law, a survivor of the act of 1859, was repealed. A most wise one in its day, the time had come when it was no longer needed, and instead it was being utilized by unlicensed violators as a means of evading the main purposes of the Medical Practice Act. A clear legal definition of what constitutes the practice of medicine was laid down in the penalty section of the law, for the first time in the history of medical legislation in North Carolina. It was on account of the lack of this definition that the Supreme Court reversed a decision of conviction of Biggs by the Superior Court, in the famous case of State versus Biggs. This same section dropped the "fee and reward" clause of the old penalty section. Previous to this time, to be guilty of a violation of the penalty section of the Medical Practice Act, it not only had to be established in evidence that the accused practiced without first obtaining a license from the Board of Medical Examiners, but in addition that he had received fee or reward for the service rendered. In other words, it was possible for an unlicensed man to practice medicine in North Carolina with impunity, collect his compensation on some other basis than being paid a fee for the service, and go right along without ever being in danger of being convicted for violation of law. The interest of the state was in the material return, not the danger to the public of incompetent service. It was no crime to practice medicine without a license unless a charge was made for the service. Two notable cases in line with this point were passed upon by our Supreme Court. In the case of the State versus Call, it was established in evidence that the defendant, Call, had been actively engaged in the practice of medicine and surgery in a western county for a period of fifteen years, that he held himself out to the public as a physician and responded freely to calls to administer to the sick; even the accused himself admitted these facts. The presiding judge instructed the jury that if it believed the evidence of the defendant, to bring in a verdict of guilty. The case went up to Supreme Court and the verdict of the lower court was promptly reversed, in that the opinion pointed out that, admitting all these facts to be true, there was nothing brought out in the evidence that Call had ever received fee or reward for the

service rendered, and that the conviction was not based on the law of the state. In the case of the State versus McKnight, the defendant McKnight was an osteopath who was charged with practicing medicine without first obtaining a license to practice the same from the Board of Medical Examiners. It was established in evidence, and admitted by the defendant, that he had opened an abscess in the mouth of a patient with a small scalpel in the course of the administration of osteopathic treatment. The defendant was convicted in the Superior Court and he appealed to the Supreme Court. In reversing the decision of the lower court, the court pointed out in the opinion handed down that, while there was no question but that the use of surgical instruments constituted the practice of medicine, the conviction of McKnight was in error in that there was nothing in evidence to show that the defendant had received any compensation for the service rendered, as required by our law. In other words, until 1921, to secure a conviction for violation of the Medical Practice Act, the burden was upon the state to show, not only that the accused was unlicensed, but that the service rendered was materially compensated. The absence of a definition of the practice of medicine and the presence of the fee and reward clause made difficult the conviction of a person for violation of the medical laws of North Carolina, if he chose to fight the matter through the courts.

The act of 1921 provided for more specific causes for revocation of licenses for misconduct on the part of licentiates of the board. Heretofore the law, while permitting the rescinding of a license, was very vague as to what conduct would justify such a procedure. The new law, also, set up the necessary machinery whereby such hearings might be had, and empowered the board to summon the accused and any witnesses that might be necessary to establish the facts, and vested the board with judiciary powers. A section was enacted providing for a more comprehensive keeping of the records of the board, and requiring the various courts of the state to admit in evidence any transcript certified as to entries in the records or the absence of such entries. For the first time in the history of medical licensure in North Carolina, the board was permitted legally to pass such special rules as it deemed wise in respect to admission to the examinations, the conduct of the examinations proper, and the conduct of the applicants themselves. This was a distinct forward movement. Perhaps one of the most important advances made in medical licensure in the state was the enactment of the section repealing the further privilege of the unlicensed to qualify for the practice of medicine merely by registration under the provisions of the act of 1889 with the county clerk of the superior court. Under the provisions of this old law, the county clerk really had all the powers of medical licensure without even the necessity of ascertaining that the one licensed had any medical skill whatever. Previous to 1921, the board, while imposed by law with the duty of enforcement of the Medical Practice Act, had no complete roster of those qualified legally to practice medicine. It

is true that the records showed a complete list of the licentiates, but, owing to the provisions of the act of 1889, many physicians had qualified merely by registration in the various counties. To cure this defect, the General Assembly enacted a provision in the law whereby every clerk of a superior court in the state was required to certify a complete list of all physicians registered in the various counties from the enactment of the law in 1889 to 1921. The lists were obtained from the various clerks, and from these were compiled an official list of the unlicensed registered physicians of the State. When completed it was found that over a thousand physicians, at a conservative estimate, had qualified to practice medicine through the provisions of this law, many of whom were the most eminent and successful physicians in the state. In time to come this record will constitute a most interesting and valuable chapter in the history of medical licensure in North Carolina. Previous to 1921 the law required that the fee paid by the applicant should be refunded if he failed the examinations. This was a most inconsistent requirement, in that the expense incurred was in holding the examinations, not in issuing the actual license. The blank license, at the most, costs only a few cents. It really costs more to examine a poorly qualified student than one well fitted. Our records show numbers of instances of applicants repeatedly rejected who never obtained a license. In one case the applicant took the examinations eleven times, was never licensed, and yet did not contribute one cent toward the payment of the expense incident to holding the examinations. The law was amended in 1921 so that the refunding of fees of rejected applicants is no longer required; the fee is paid for the examination rather than for the license.

A discussion of this character would be incomplete that did not bring out many of the notable events connected with the subject; the high lights, so to speak. Many of these are of interest, and bring out the human side of life. At the beginning of the functioning of the board, no preliminary education, medical college or year of graduation, or grades of applicants were noted in the records. Beginning in 1879, the medical college and year of graduation of the applicant were noted. In 1889, a permanent record was shown of the average grades attained by the applicants; a practice that has been continued to the present time with the exceptions that the grades of 1909, 1912, 1913 and 1914 are missing. The records show that 70 per cent passing average was required in 1889, which was changed to 80 per cent the following year and has been maintained to the present time. In 1901, for the first time, notation was made of preliminary educational attainment of the applicant. Unfortunately there are a number of breaks since that time, but the records are comparatively complete in this particular since 1910. Beginning with 1909, the names of licentiates were entered in the register in alphabetical order and licenses were issued serially by this list; this custom is still observed. Previous to this time it was the custom to issue licenses in the order of registration of the candidates for the examinations and to make entries in the records

accordingly. It was and is very difficult to locate the name of a licentiate in the annual lists where no alphabetical order is observed.

In 1920 the old register of licentiates was full to overflowing and it became necessary to transcribe the names to a larger and more modern register. The old register has been deposited in the Hall of History in Raleigh and will become more valuable as time goes on. In 1921 it was possible to make up a record of individual grades of applicants beginning with 1915, and this has been continued to the present time. These entries are made on the backs of the original registration cards, which gives the advantage of not only preserving a record of the grades but also the signature of the applicant himself.

The board met regularly each year after its creation until 1862, when the Civil War interrupted the sessions, none being held during the years 1863, 1864, 1865, 1866, 1867, and 1868. Sessions were held in 1869, 1870, and 1872, but there are no minutes to support the entries of licentiates in the register; even the places of meeting are not known except the 1872 session in Raleigh. At that time one license was granted; the late lamented and much beloved Doctor George G. Thomas of Wilmington was the recipient. From 1869 to the present time there has never been a year in which one or more sessions of the Board have not been held. The reconstruction period following the Civil War had as profound effect on medical licensure as the war itself. This experience was repeated to a lesser degree after the late World War.

The first Board elected consisted of Doctors James W. Dickson, Charles F. Johnson, Caleb Winslow, Otis F. Manson, William H. McKee, Christopher Happoldt, and J. Graham Tull. Owing to the early outbreak of the Civil War, this Board served seven years instead of the legal term of six years, and thereby enjoys a distinction. This original board has been succeeded in the years that have transpired by boards whose members were among the most eminent and brilliant men in the medical profession of the state. The State Medical Society, in whose hands the selection of the board rested, has ever been zealous in placing only the ablest members of the medical profession on the board when the election came.

The first license issued after the creation of the board was during the initial session held June 6, 1859. Doctor Lucius C. Coke, now deceased, of Palmyra, in Martin County, has the honor of being the first licentiate. Doctor Wisconsin Royster, of Raleigh, is the oldest licentiate of the board now living; his license number is 40. Doctor B. R. Graham, of Wilmington, has the unique distinction of being the only physician ever to receive two separate permanent licenses. He was first licensed in 1895 under license number 904, but in 1904 had the misfortune to have it destroyed by fire. He applied to the board for a duplicate certificate, and the secretary, by mistake, issued the license under a new serial number, 1500, and entered his name among the licentiates of that year. Doctor John Franklin Reid, of Concord, bears the honor of being the first applicant to be granted a license without examination in 1907, following

the passage of the law permitting the board to grant license to physicians licensed in other states. In 1885, owing to the ratification of the law making it a misdemeanor to practice without license, there was a rush to qualify, and one hundred and twenty applicants were licensed that year; the largest number in the history of medical licensure in North Carolina with the exception of 1915. Three sessions were held that year, in Durham, Raleigh, and Asheville. Doctor Elma Travis, of Raleigh, has the honor of being the first woman licensed, in 1888. Doctor L. Hughes Brown, Wilmington, has the double distinction of being the first and only negro woman ever to receive a license to practice medicine in the State, in 1894.

During the sixty-six years that the board has been functioning, many errors have crept into the register; errors of omission as well as commission. As an illustration, serial numbers of licenses have been duplicated and unassigned. A careful check at the time of the transcription of the old register showed that these exactly cancelled each other, so that the last number shown represented the actual number licensed. Perhaps the greatest error occurred when license numbers 2730 to 2764 inclusive were duplicated and assigned to double that number of licentiates; the numbering being repeated immediately following the first assignment of the numbers. A previous secretary omitted entering the name of a licentiate in the register. In his anxiety to place together the names of two brothers who took the examinations at the same time, he overlooked the name of the applicant succeeding the name of the first brother. One secretary omitted entering the names of applicants licensed without examination in the register of licentiates during his whole term of six years, and the entry of these names later has resulted in the serial numbering being greatly broken. Two previous secretaries, by oversight, omitted to enter the name of a licentiate on the register or minute-book. A check of the certified lists of registered physicians from the various clerks of superior courts in the state caught these errors and the present board, by special resolution, voted to grant license to these two men. Their names were entered in the list of licentiates of that year, but licensure was shown as of the actual year in which license was granted. One of these men had been dead for a good many years, yet it was the only way by which to rectify an injustice. Perhaps it is the only instance of posthumous medical licensure on record. When the errors were detected it was not in the power of the board to correct the minutes of another previous board; hence the disposition of the questions.

Much tragedy and humour are revealed in the records of the board, and a careful study is very interesting, to say the least. Who can tell the disappointments, heart-aches and blasted hopes that are behind the scenes? Even duplicity, trickery, dishonesty, and intemperance are revealed in the pages; for a good many applicants have been rejected or expelled from the examinations on account of misconduct. The license of a physician was revoked in 1898 for being guilty of receiving a bribe. Doctor Thomas E. Anderson, then secretary of the board, in 1899 detected "a dastardly attempt to secure

a license by fraud'' by an applicant who employed another to write the examinations in his name. The closing note was ''Detected and exposed by secretary before accomplishing purpose intended.'' The secretary entered the board as meeting on June 31, 1866. June must have had more days in that period than now. A number of applicants under age have passed the examinations and their licenses have been held until they reached their majority; one of these applicants, however, passed the examinations but died before he came of age and hence never received his license. An applicant was voted his license in 1923 when apparently he was in good health. He died in the early morning following the holding of the session, and before the license could be issued and sent to him. One female applicant, aged 70, took the examinations and failed, poor creature.

One of the strangest and queerest instances recorded is the case of an applicant who the record shows was licensed after examination in 1885. At that time the applicant was a non-graduate. The minutes of 1889 carry the name of the same man among the rejected, showing, however, that he had continued his medical course in the intervening time and graduated. A careful comparison of the data of the two entries shows them to refer to the same individual. The names, unusual in character, place of residence, and medical college are identical. It is impossible to account for, or to explain how the board could reject a physician for license after a permanent license had already been issued.

Six hundred and thirty-six applicants have been rejected in the history of licensure. Of this number, 299, or 47 per cent, have been licensed at some subsequent session. Of the remaining 337 rejected applicants, 46 qualified either by registration or special permit; leaving only 291, or 46 per cent, of all failures who have never qualified by obtaining license.

At the first session of the first Board of Medical Examiners, June 6, 1859, a form of license was drafted and adopted. This form has been in use from that time to the present, and has never been changed or amended in the slightest particular. When the newly elected fifth board met in Raleigh on May 22, 1884, a committee was appointed to provide a suitable seal. Previous to this time the board had functioned without a common seal. Doctor A. W. Knox, of Raleigh, is the only member now living of the committee that served. From that period a seal has been used in the work, and the seal as originally designed is now used.

Many unlicensed physicians neglected to exercise their privilege of registration under the provisions of the act of 1889 within the legal time limit. As a result, many found themselves disqualified, and the board was besieged with delinquents, asking for special permits allowing registration. How these permits relieved the situation no one can say, for action in granting the permits was certainly not sanctioned by law. Boards were harassed by these applicants until 1905, when this practice was discontinued by special resolution.

Apparently for the first time, *nom de plumes* were used in the examinations of 1890 to conceal the identity of applicants during the conduct of the examinations. This method was continued until 1898, when the present system of numbering was adopted.

A total of fifty-three women have been licensed during the history of licensure, the first in 1888. In 1900, two ladies tied for first honors in the written examinations. One hundred and ninety negroes have been licensed since the creation of the Board; three being licensed for the first time in 1886. Three thousand six hundred and one physicians have been licensed since the passage of the act of 1859 legalizing the practice of medicine.

No discussion of this character would be complete that did not mention some of the more intimate happenings as portrayed by the minute-book. The old records, although written by hand in a style of penmanship now almost unknown, are as bright and clear as the day when the entry was made. Some of the writing is beautiful and even, appearing almost as steel engraving; other writing is the familiar scrawl often seen in this day. The original medical practice act is copied verbatim in the front of the first minute-book. In 1909, it became necessary to provide a new minute-book and the modern typewriter superseded the older style. The new records are much more legible, but the personal touch, human interest, and emotions have almost disappeared. After all, it is questionable if there is any great gain under the new order.

Absences of members from annual sessions soon gave rise to embarrassment in holding examinations, and one of the earliest boards adopted a special resolution setting forth that "Absence of a member from two sessions . . . . shall be considered equivalent to a withdrawal of membership, and the members present shall fill the vacancy for the balance of the term." With the trials and tribulations incident to holding the examinations and grading the papers before adjournment, things did not always run smoothly and dissensions arose at times. Twice in the sixty-six years resignation of a member of the board has been requested. It is significant that these two cases occurred during the years that the Society elected the board with overlapping membership. It is certain that the injection of "new blood" did not tend to promote harmony. On the other hand, with few exceptions there was the broadest sympathy existing between the members personally. On one occasion the bank in which the secretary had deposited the funds of the board failed. The loss occurred through no fault of this officer, for the money had been placed in a national bank, yet his bond was liable for the loss. The board voted to release the secretary from any liability and took the loss upon itself. As a whole, the feeling between the members of the various boards has been most cordial, and it is noticeable that the association through these years of common service is responsible for the development of the warmest regards, highest respect, and friendships and affection that last through life. This is a most beautiful thing, and is a tribute to the personality of the men selected.

Several members of the various boards died during their term of office, and some few resigned before the expiration of their term, on account of press of personal and professional affairs. Almost all the members have faithfully and conscientiously, for the entire six year period, discharged the onerous duties imposed. From 1890 to 1902 an experiment was tried by the State Medical Society, that of electing boards in which the terms of the members expired at different intervals, all this without the sanction of the law and in plain opposition to the provisions thereof. The experiment proved to be a miserable failure, as it was productive of more dissatisfaction and dissension between the members than has ever occurred before or since. In 1902 this plan was abandoned, and the whole board elected for a six-year term, as required by law.

We now have one of the best and most effective medical practice acts in the Union. The principal difficulty in the future lies in maintaining the ground that has been gained, and in enforcing the law as written. Each assembly of the lawmakers brings forth the introduction of bills that, if enacted, would throw medical licensure back to its original status. It is bad enough when laymen are responsible for such legislation, but this can be explained by the knowledge that probably they do not realize the far-reaching effect on a fundamental law of the commonwealth. When members of the medical profession lend their influence and active support to legislation that would break down and destroy our medical laws, the matter then passes beyond the power of reasoning and comprehension. It is deplorable that a number of such instances have occurred.

Medical licensure and the enforcement of medical laws have now developed to the point that the full time of an executive officer is absolutely necessary to properly conduct and discharge the duties and to effectively enforce the law. The present income from fees is insufficient to meet such an expense, yet the fact remains that this problem must be worked out. Unless the Society works out some plan looking to this end, it is certain that the State will take over the control of medical licensure, the Society will find itself shorn of its authority, and membership on the Board of Medical Examiners will be based upon political preference.

One possible source of revenue suggests itself as a means whereby sufficient financial support might be obtained to inaugurate the system. It might be possible to amend the law in such a manner that the annual license or privilege tax now paid by physicians to the Revenue Department could be diverted to the treasury of the Board of Medical Examiners in the form of an annual registration fee, to be used for the expense incident to carrying out the laws relative to medical licensure and in enforcing the provisions of the law over the state. Such a law exists for the pharmaceutical profession, and their board enjoys the use of the income derived therefrom. Are the pharmacists any better than the physicians? Would not such a plan be practicable? If so, would it not be possible to bring sufficient pressure to bear to assure its adoption?

In connection with the collection of the annual privilege tax by the Department of Revenue, it is significant that the form of receipt issued is responsible for and one of the most prolific sources of violations of the medical practice laws of the state. The very form of the receipt is misleading and false and is calculated to deceive even members of the medical profession who do not know otherwise. The receipt has at the top, in bold type, the word "License," and hundreds of quacks and impostors pay this annual tax, secure the receipt, and deliberately practice medicine all over the state without even the formality of securing a permanent license from a board. Only a few months ago a prominent and intelligent physician, who had begun the prosecution of a most ignorant and dangerous negro quack, had the case dropped when he showed a receipt for the payment of the annual tax to the Commissioner of Revenue. Some plan should be devised that would make the payment of such tax impossible except by those who hold a license issued by a legally constituted board. The diverting of this tax to the treasury of the board would solve this. To clean up the violations of the medical laws through this channel alone will require months and years as it now is, and entail an expense that cannot be met under the present financial status.

In closing, we feel sure that the medical profession all over the state are in accord with the position of the State Board of Health and the Board of Medical Examiners in insisting that only licensed physicians be selected as public health officers in those cases where the duties assigned require medical service. North Carolina doctors have high ideals, and will lend every support to efforts for their maintenance.

Upon motion of Dr. McBrayer, the thanks of the Society were extended to Dr. Bonner for his very comprehensive history of medical licensure, and it was voted that a committee be appointed from the Society, to coöperate with a committee from the State Board of Medical Examiners, toward carrying out the aims mentioned in his paper.

The following committee was later appointed: Dr. J. Howell Way, Chairman, Waynesville; Dr. A. A. Kent, Lenoir; Dr. Hubert A. Royster, Raleigh.

REPORT OF THE HOUSE OF DELEGATES

The Secretary of the Society reported the action of the House of Delegates in the election of officers and committees. Upon motion of Dr. W. L. Dunn, seconded by Dr. Cyrus Thompson, the report was accepted.

INSTALLATION OF OFFICERS

The incoming President was escorted to the chair by Dr.. Cyrus Thompson and Dr. J. M. Parrott, and was introduced by Dr. Thompson in the following words:

DR. THOMPSON:

Gentlemen of the Society, it gives me a vast deal of pleasure

to present to you your President for the coming year, one, certainly, of the most noted members of the Society in North Carolina, and one of the most noted members of the Society outside of the State of North Carolina, a man of very great "kidney"—Dr. William deB. MacNider.

DR. MACNIDER:

Gentlemen of the Society, I rather hate to start off by the usual statement of an expression of appreciation for this thing you have done for me, but it would not be courteous and would not be what is first in my heart if I did not try to say how keenly I do appreciate it and how much it means to me, and I hope so earnestly that I can do in some small measure for the Society what the men who have been ahead of me have done. I can not do much, because I am not as old as some of those men and I have not the experience and have not the ability, but I feel that the profession will help me to be of service to this organization. An individual, an organism, or an organization has certain elements of mechanics in it; it is bound to have. It can not run unless it has certain mechanical requisites, and I suppose a president falls in that class of a mechanical cog which has to try to help it function. I suppose the highest manifestation of life on the part of an individual or an organization is its spiritual life. I am sure the highest manifestation on the part of an organization like this is its spiritual life, which seems to me to be concerned with the study and pursuit of medical knowledge, the extension of affection and consideration and understanding of one another, and the determination to try to find what is true and what is right and to run on that principle. I am so grateful to you.

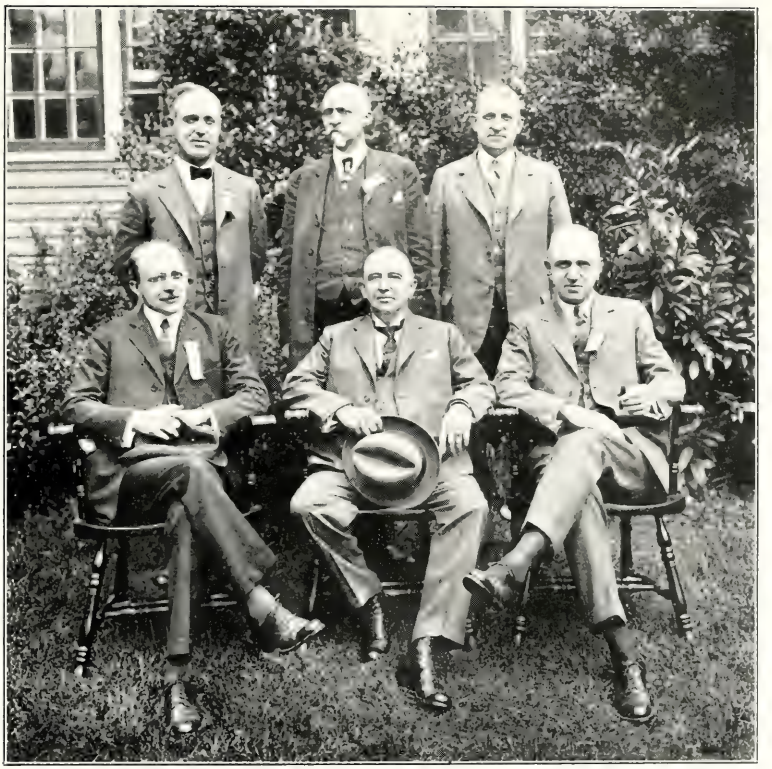
RESOLUTIONS

DR. W. L. DUNN, Asheville:

It is a great pleasure to offer a resolution that this association extend a vote of thanks to the local profession and the Committee on Arrangements for the splendid entertainments they have arranged for this meeting, and that we express our great pleasure in having been here with them. We also express our appreciation to the hotel authorities for the courtesies and the entertainment extended.

This motion was seconded by Dr. J. M. Parrott, and adopted by a rising vote.

The Society then adjourned *sine die*.



Sitting: Col. W. L. Dunn, Asheville, commissioned May 31, 1919; Col. John Wesley Long, Greensboro, commissioned Nov., 1923; Col. H. A. Newell, Henderson, commissioned Jan. 10, 1924.

Standing: Col. M. L. Townsend, Raleigh, commissioned Aug. 3, 1924; Col. Jos. Howell Way, Waynesville, commissioned Oct. 3, 1924; Col. J. W. MacConnell, Davidson, commissioned April, 1925.

CONJOINT SESSION

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

AND THE

NORTH CAROLINA STATE BOARD OF HEALTH

WEDNESDAY, APRIL 29, 12 M.

DR. J. HOWELL WAY, PRESIDENT OF THE STATE BOARD OF HEALTH, PRESIDING

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH

W. S. RANKIN, M. D., D. SC., RALEIGH

Mr. President and Members of the Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health:

In accordance with a wise custom and in obedience to an important law of this State. I have the honor to lay before you the annual report of the Secretary of the North Carolina State Board of Health. In this annual report I shall attempt to discuss briefly recent legislation which bears a relation to the official interests of the State Board of Health, and also the main features in the development of the work of the Board during the past year.

LEGISLATION

The State Board of Health had an official interest in the following legislation: (1) Appropriation bills; (2) a bill relating to the medical inspection of school children; (3) a bill providing for sanitary tourist camps; and (4) a bill permitting the State Board of Health to increase the salary of its secretary.

The appropriations for the State Board of Health for the present fiscal year ending June 30, next, are as follows:

General appropriation	$340,000
Appropriation for laboratory	75,000
Appropriation for medical inspection of schools	50,000
Total	$465,000

An additional income of approximately $50,000 is received from other agencies, mainly the International Health Board and the Federal Government. The total operating income of the State Board of Health, then, for the present fiscal year amounts to approximately $515,000.

At the beginning of the present fiscal year, July 1, 1924, the Board of Health had a surplus, that is, an unexpended balance from the appropriation for 1923-'24, of $52,000. This balance was derived from two sources: (1) A joint fund received from the State and Federal Governments for maternity care. This fund amounts annually to the sum of $49,000. Of course, it would be easy enough for the State to spend this money on work designed to improve the care of maternity and infancy, but as yet no suitable plan has been developed either in this State or other States which would justify so large an expenditure. With the development of a suitable plan for maternity and infancy care, the State, of course, can well afford to spend as much as $49,000 a year; but until such a plan has been carefully worked out, largely on a county basis, it will be extravagance to spend so large an amount. (2) There was a considerable balance left over from money appropriated by the preceding General Assembly, which the Board requested for the purpose of supplementing and assisting counties undertaking full-time health work. The practice of the Board is to participate with counties installing full-time health departments to the extent of an annual appropriation of $2,500 per county, conditioned upon the counties appropriating an equal sum, or more, and conditioned further upon these departments performing work of a certain quality. Naturally, the State Board of Health in asking for an appropriation for this purpose has based its estimate upon the maximum number of counties that might adopt the full-time department principle within the ensuing biennium. Because of the probability and the desirability of a surplus on this particular item in our budget, the Executive Officer of the Board has always suggested to the General Assembly that this item be in the form of a separate appropriation, and conditioned upon the counties doing certain things in order to receive it.

When it became apparent in the fall of 1924 that the State would almost certainly adopt a rigid retrenchment fiscal policy, the Board of Health scaled its appropriations as much as possible to harmonize with what seemed to be the intention of the State Government to maintain its present position rather than attempt to rapidly expand along certain lines. In reducing its budgetary request to a minimum, the Board of Health attempted to economize in two ways: (1) It decided to undertake no additional new work, that is, to establish no machinery and to undertake no work not already provided for in funds and personnel; and (2) to make its estimates for funds for county assistance during the next two years on the basis of a minimum of requests rather than a maximum of requests. Heretofore the Board has assumed that about ten additional counties would adopt full-time health departments between regular meetings of the General Assembly. For the ensuing biennium it has assumed that less than half that number will make such requests of the Board, or, if such requests are made, that not more than four or five additional counties may be assisted.

WATSON SMITH RANKIN, M. D., D. Sc.

Secretary of the North Carolina State Board of Health and State Health Officer, July 1, 1909,—May 31, 1925.

With the foregoing considerations in mind, the State Board of Health requested for the next fiscal year, beginning July 1, 1925, $457,000 in place of the $465,000 now received. The $457,000, plus the $50,000 which will be available from the International Health Board and the Federal Government, would have given the Board a working capital for the next fiscal year of $507,000. Of this amount the Board received $405,000 in place of the $457,000 which it asked, so that the working capital for the next fiscal year will be $405,000 plus $50,000 from the International Health Board and the Federal Government, or a total working capital of $455,000 as compared with that for the present year of $515,000. For the second fiscal year, the General Assembly provided $15,000 additional, so that the total working capital of the Board for the second fiscal year, beginning July 1, 1926, will be increased from $455,000 to $470,000.

The decreased appropriations for the Board of Health will affect its work in the field in three ways: (1) As already suggested, the Board will not be able to participate in the work of more than 38 full-time county health departments. It is now participating in the work of 33. For this reason, between now and July 1, 1927, not more than 5 additional county health departments can be organized. (2) It will be necessary to restrict and slightly reorganize some of the official divisions of the Board in order to meet the necessities of the smaller appropriations. (3) Under the new appropriations, the State Board of Health will suffer considerably in the amount of printing allowed it. This will probably result in decreasing the Bulletin either in the size of its mailing list, or the frequency of publication.

The bill providing for the medical inspection of schools carried the following provisions and requirements: (1) It provided a medical examiner for school children in every county of the State. In the counties with full-time health departments, the health officers were required, as they now do, to make the examinations. In the counties without full-time health departments, the county board of education was required to elect a medical examiner from the registered physicians of the county.

(2) The bill provided that in the counties where the board of education elected an examiner, he should be paid fifty cents per examination; in the counties with a full-time health officer, the examinations were to be made as a part of the regular duties of the health officer, as is the case at present.

(3) The bill required the parents of all children entering the public schools for the first time to have such children examined by their whole-time health officer or the medical examiner elected by the board of education, at times and places to be designated by the whole-time health officer or the medical examiner of school children.

(4) The bill provided that the scope and details of the examination should be defined by the State Health Officer and the State Superintendent of Public Instruction. This provision was for the

purpose of bringing about uniformity of methods and comparable results as between counties.

(5) The bill provided that the physical defects found in the examination should be classified, in accordance with the rules and regulations of the State Board of Health and the State Department of Public Instruction, as class A, B, C, and D defects.

(6) The bill required that the parents of such children as were found to have defects of classes C and D, that is, the more extreme grades of defects, should either (a) have the defect treated and removed, or (b) present the child to the board of education and show cause why the child should not be treated. The claim of a parent that he was unable to pay for the treatment of a child, if considered well-founded by the board of education, need not operate to prohibit the treatment of a child for the reason that the local board of education, with some State assistance through a fund of $50,000 now appropriated for medical inspection of schools, would provide treatment for such cases. The only plausible excuse that would operate in preventing the treatment of a child with a C or D class of defect would be the character of the defect and the condition of the child's general health. Of course, the medical examiner for school children would sit with the board of education in passing upon questions of this kind.

(7) The bill makes the medical inspection of school children and the arrangements for treating defective children largely a matter of local or county responsibility and administration. This is most desirable.

(8) The best feature of the bill is that it shifts the initial responsibility for finding the physically defective school children and securing their treatment from the State to the parent. At present the burden rests upon the State for going into the schools, finding the children with defects, hunting up the parents, telling the parents about the defects of their children, and urging them to have the children treated. If the bill had passed, the burden would have shifted from State to parent to show that his child was physically qualified to enter the public schools. This is now required of parents whose children enter industry. Furthermore, the burden would be upon the parent, after the child had been found to have a serious physical defect, to secure treatment from his own physician or specialist, and this would be possible in about two-thirds of the cases; or to show the county authorities his inability to provide treatment and to secure from them such assistance, financial and otherwise, as would enable the child to be treated.

The bill would not have in any way interfered with the compulsory school attendance law, as parents of children found defective were allowed six months from the time the defect was found in which to have the child either treated or excused from treatment by the board of education. Had the bill become law, it would have brought about the examination of about 125,000 school children in this State that enter the schools for the first time each year, and in all probability

would have resulted in the treatment of at least 60,000 or 65,000 of the defects found, or not less than twice the number of defects treated under our present system.

The bill failed to pass, although there was considerable support for it. My purpose in bringing this matter before you at this time is that the proposed legislation may be better understood and more fully supported when it reaches the next General Assembly.

Another bill that was introduced, and defeated largely by those whom it was intended to help, was a bill sponsored jointly by the Board of Health and the State Highway Commission. That bill provided for the sanitary construction and maintenance of tourist road camps along State highways. The following were its principal provisions and requirements: (1) Travelers were prohibited from camping on or near State highways except at places designated by the State Highway Commission and indicated along the State highways by suitable signs or notices. (2) A person who for certain business reasons desired to have a camp located near his place of business—a cross-roads store, a filling station or a garage—might request the State Highway Commission to designate a site with suitable provisions for securing water and for the disposal of excreta, which he would offer the State for camping purposes free of cost, and which he further would agree to maintain in accordance with sanitary rules and regulations to be promulgated by the State Board of Health. It was believed that the interest of persons owning filling stations, garages, or country stores would be sufficient to induce them to set aside property for camping sites and to agree to keep the said property in good sanitary condition. In this way it was assumed that the State Highway Commission would be able to obtain sufficient camping sites along the State highways for the use of tourists and travelers, and to do this without any extra expense to the State. (3) The owner of the camping site could make no charges against tourists for ordinary camping facilities, including ground, water, toilet facilities, but he might charge reasonable prices for such special provisions as shelter, shower baths, wood, and stoves for cooking.

It was believed that the prohibition of promiscuous camping along the State highways, and bringing together travelers in larger numbers at certain designated places, would be of such advantage to the owner of the land on which the camp was established to both justify the donation of property and secure a sufficient number of camping sites. This bill was designed largely to take care of those sections of the State where tourist travel is greatest, and it was from precisely that section of the State that the opposition to the bill developed. Had the bill become law, unsightly camping sites and unregulated camps would have disappeared, and the convenience of travelers would have been greatly advanced. This is another bill that we hope, after it has been more fully considered and has a larger background of public support, will find its way into the statutes of the State.

The other bill which was introduced and which was defeated is one of considerable importance to the future health work of this

State. There is a law which prohibits the State Board of Health from paying its chief executive officer a salary in excess of $5,000 a year. In this matter the State discriminates against the State Board of Health, since it is the only board of directors whose chief executive officer is required by law to be a man with professional qualifications that is so restricted in the salary to be paid its executive. The boards of directors of all State institutions, of all the State hospitals, of all the State schools, where professional men are required as their executive officers, are permitted, without any restrictions, to determine what salary shall be paid the officers of these institutions. The present salary of $5,000 is not sufficient at this time to either obtain or to hold the best available talent for the position of State health officer.

The More Important Developments in the Work of the Board During the Past Year

Last April the Board of Health employed an officer who is attached to the Bureau of Engineering and Inspection and whose special duties were directed to the improvement of the milk supplies of the municipalities of this State. This piece of work was undertaken and closely modeled after an impressive example of what could be done in standardizing and improving the control of public milk supplies in the State of Alabama. The work in Alabama was carried on by a health officer of the United States Public Health Service, Mr. Leslie C. Frank, and it represented the best opinion of the United States Public Health Service as to proper milk control. While Mr. Frank's initial work was in Alabama, and while North Carolina was the second State which adopted the general plan as worked out in Alabama, it is interesting to know that at this time, in a little more than two years after Mr. Frank began his State plan of work, seven States of the Union have adopted it; furthermore, three of the larger cities of the South, namely, Atlanta, Memphis, and New Orleans, have adopted the standard plan of milk control.

Since April, last year, eighteen towns and cities of this State, with a total population of 245,000, have adopted this standard milk ordinance. The list includes the following towns and cities:

Burlington	Hendersonville	Oxford	Statesville
Durham	High Point	Rocky Mount	Tarboro
Goldsboro	Lexington	Salisbury	Thomasville
Greensboro	Mount Airy	Sanford	Washington
Greenville	New Bern		

The plan of work, naturally, is based upon a standard milk ordinance, which carries with it the following advantages: (1) It stabilizes the milk industry. Heretofore there have been about as many milk ordinances as there have been cities in the United States; moreover, with each change of city health officers or milk inspectors, there has usually been change in the existing ordinances for milk control work. The dairying industry has had to adjust itself to these frequent changes of ideas in regard to milk control, and the whole situation has been most unsatisfactory in that it lacked that stabiliza-

tion which comes out of a general and uniform understanding as to reasonable objectives and methods in milk work. The standard milk ordinance, while not better perhaps than some of the city milk ordinances, does represent the best and largest and most authoritative group judgment on milk supervision. (2) A standard milk ordinance permits the State Board of Health to render a large amount of assisttance to our towns and cities in organizing their milk control work. Such assistance would be greatly limited, or made almost impossible, if each municipality had its own plan of milk control. (3) Under a standard ordinance, milk grades will not vary from city to city. A grade A or a grade B milk, raw or pasteurized, will be the same milk in one city with the standard ordinance that it will be in all other cities with the standard ordinance. This being true, the public, who will quickly become educated to understand the significance of milk grades, once the meaning of a grade is generally established and does not vary from city to city and from year to year, will be in a better position to select milk than would be otherwise the case. (4) Under the plan of the standard ordinance, those cities and towns that desire the State to check their system of dairy inspection and laboratory technique, and, finding their grading of milk to be in accordance with the accepted standards, to publish and in a sense give a State certification or guarantee of their milk supply, may receive such a service.

Another important piece of work which was inaugurated last year was a county system of control over midwives. This is made possible through the adoption by the county board of health of a local regulation which all county boards of health under an existing State law have the authority to pass. This local regulation requires midwives, after reasonable notice, that is, three or four months, to secure permits from the county health department, county health officer, or county nurse, before attending cases of pregnancy and cases of labor. The permit is granted only to midwives who (1) have been instructed by a county nurse, more about what not to do than how to conduct cases of labor, and (2) who have been examined by a committee of the county medical society acting with the county health officer. This procedure eliminates the more careless and unintelligent types of midwives, and reduces the problem of supervising the midwives through the nurse usually from 30 to 50 per cent. The permit granted is only for one year, expiring the following January 1, when the midwife must apply for and receive another annual permit to continue her care of cases of maternity; moreover, the permit is not only a temporary or annual permit, but it is a conditional permit. The local law provides that the permit is null and void if the midwife shall violate any of the following conditions: (1) To report, to the county health nurse or county health officer, every case of pregnancy that consults her ten days prior to labor. (2) To notify, or have notified, the nearest physician in the event that a case of labor is delayed a definite number of hours or certain complications arise. The condition which requires the midwife to report every case of pregnancy, except an emergency call, to the health officer or nurse,

makes possible that most important provision of the law, to wit: that the midwife may attend only cases of pregnancy or labor that have been approved by the county nurse as suitable cases. When the county health nurse or health officer is notified of a case of pregnancy that has applied to a midwife for care, a visit to the woman ascertains whether she is a safe risk for midwife attendance. If there are complications, or if there is a history of previous difficult labors, the midwife is prohibited from attending the case. If a case where midwife attendance is prohibited is financially able to employ a physician, all that is done is to explain to the family the importance of such a procedure, and by education and persuasion get the family to apply for medical service. If in a few rather exceptional cases education and persuasion are not sufficient, the county nurse or health officer simply prohibits midwife attendance, and any midwife attending such case loses her permit. If the case is one that is dangerous for midwife attendance, and if at the same time the family conditions are such as not to permit the employment and payment of a physician for obstetrical services, a careful record of the family circumstances and the woman's condition is made and the case is taken out of the hands of the midwife, provided an understanding and arrangements have been arrived at between the county authorities and the county medical society for attendance upon such cases. Obviously, the nurse or health officer cannot take away even a dangerous case of pregnancy from a midwife where some arrangement for medical service has not been perfected. It is believed that when the details of this system of local midwife control and supervision have been perfected in the three counties where the plan is being developed, the percentage of births attended by midwives can be tremendously decreased, with a corresponding increase in medical care for maternity cases. Naturally, we should expect a considerable drop, when this condition has been brought about, in both the combined puerperal death rate and the infant mortality rate.

Any county medical society has within its power, through its county board of health, on which there are two physicians, to regulate either in the way above mentioned, or in some better way that such a society may devise, the care of maternity cases by midwives, which at this time in North Carolina extends to 35 per cent, practically, of the births, and in certain counties to more than 50 per cent of the births. A county medical society, through its influence and interest, may regulate the work of these midwives on the same principle that the State Medical Society determines the qualifications of who shall practice medicine. However, in dealing with this local problem, the county medical society should and can issue not licenses, but permits, and not permits of an indefinite duration, but permits terminable on the first of each January; and not only that, but permits conditional upon the midwives' observance of certain rules which the county medical society may consider and approve.

During the last year, four new counties have installed full-time health departments, these being Brunswick, Rutherford, Richmond,

and Johnston. There are now in all 35 counties with full-time health departments, with a total population of a little over half that of the State. In addition to these counties with full-time health departments, the cities of Asheville, Greensboro, Charlotte, Winston-Salem, and Rocky Mount maintain independent full-time health departments. The 35 counties expend about $450,000 a year for public health work. North Carolina is, as it has been for a number of years, the second State in the Union in the number of full-time health departments, the only State with more full-time health departments than North Carolina being the State of Ohio, and in that State counties of a certain population are required by law to establish full-time health departments, whereas in North Carolina the establishment of a full-time health department is absolutely optional with the county.

A Final Word

This final word must be more personal than official, and more of sentiment than of sense; however, this is sense, that in the last analysis of human character and values it is sentiment (the feelings, the emotions), not judgment, that tips the scales. Sense is nothing more than a dead and dusty book until sentiment, the life and the breath of the gods, quickens it into life.

When one looks rather dispassionately upon life in its panoramic proportions, only one thing seems to hold its color and to be of lasting value. That thing is service—that process by which life saves itself, passing on to other generations all that is imperishable and of permanent value. The Great Teacher taught, and Nature everywhere and always echoes His teachings, that flesh is flesh, nothing more than a mortar of elements, till by molecular process within the cells it is burned up and transformed into that energy which gives the cup of water, clothes the naked, feeds the hungry, and ministers to the sick. So it is that in service to others we sacrifice or make sacred the living molecule, the cell of molecules, and the body of cells, traveling with Him step by step, atom by atom, the *via crucis* as it winds over the hill.

Opportunity for service, the greatest blessing that can come to a man, you gentlemen of the Board and the Society have given to me as you, in all probability, never gave another. By your consent and approval I have for sixteen years occupied one of the most strategic positions for real and lasting service which any man in this great State, with its two and three-quarters millions of people, may occupy. The position of State health officer is nearer those causes that influence the fluctuations of our death rate than that of any other citizen. A fluctuation of the State's death rate by one-hundredth of a point means life or death for twenty-seven people; means health or sickness for one hundred and ninety others; means impaired or improved health for one thousand others. Or looking at the significance of opportunity for public health service from another angle, let us consider briefly what vitality really means to those who possess it in varying degrees. Vitality determines interest; interest deter-

mines whether one works for love, freeman; or whether one works for fear, bondsman; love of work largely determines efficiency; efficiency largely determines success; success largely determines happiness; and happiness largely determines attitude toward man and God. This factor of vitality, then, plays a tremendous role in the question of efficiency, happiness and right attitude toward the here and hereafter.

Exceptional opportunity for service you have given me in most generous measure. But more than that you have helped me to use it. You have helped in two ways: In one way with your unselfishness and confidence; in another way with your interest, support, and encouragement.

Through your unselfishness and confidence, the Executive Officer of the State Board of Health has been permitted the widest latitude in the selection of an executive staff. In a period of sixteen years, and in selecting or influencing the selection of probably 150 officers, I have never yet had either direction or suggestion from the Board or the Society as to who should be chosen, and perhaps I might name on the fingers of one hand the instances where a member of the Board had merely brought to the attention of its Executive Officer the name of an individual who appeared to be qualified for some office. In this way personal interests and politics, using the term in its reproachful sense, have had absolutely nothing to do with the organization of the executive staff, and I am including now within my thought and the scope of my remarks the county health officers, whose work is closely related to that of the Board. Not infrequently we hear someone refer to the politics of the State Medical Society and the Board of Health. I offer you incontrovertible evidence that whatever there is of politics in the North Carolina State Medical Society and in the State Board of Health, it is absolutely excluded and impotent insofar as using public office as a reward for personal service is concerned. As a result of being allowed to develop a working organization on a basis of character and efficiency and with personal considerations excluded, the personnel of the executive office and their work will bear favorable comparison, and I say this without the slightest reservation, with any similar organization on the continent, and the credit which is so frequently, on generous impulse and without careful analysis of the situation, accorded to the Executive Officer of the Board belongs to the staff, upon whom he is absolutely dependent, and which has really done the work. And, thinking a little further into the background of causes, the credit that belongs not to the Secretary, but to the staff, in reality, in the last analysis, belongs to the Society and the Board that have permitted the staff to come into a healthy state of being and to exist unfettered.

Through the interest of the State Medical Society, as evidenced by the frequency with which members of the Society contribute addresses and printed material on the subject of public health, you have played a great role in kindling the fire of public interest into an enthusiastic support of the work of the Board. Many important health policies have been presented to the Board and to the Society

during the last sixteen years. I recall not a single instance where the approval and the support of the Board or the Society have been denied. You have helped with your interest; you have helped with your support; you have given that stimulating assistance so needed at critical times, your encouragement; and so when we begin to look through the high power to find the real underlying causes for whatever progress in public health has been made during the administration that is now closing, we must see, if our vision is accurate, that what has been accomplished is little more than a reflex of the thought and the wishes and the inspiration of this Society. To feel that I have at least served as one of the nerve fibers through which some of the life-giving thoughts and ideals of my profession have been transmitted to the body politic, is enough to place me under the profoundest obligations, obligations coupled with the joy that they may never be canceled.

DISCUSSION

Dr. Cyrus Thompson, Jacksonville: This is a wonderful report. I do not know when I have ever read or heard anything that surpasses it in the way of literature; I do not know anything that is more beautiful than the last part of that report.

Dr. A. A. Kent, Lenoir: I am sure, sir, that the feeling I entertain in my breast is that which causes the hesitancy of this body to get up and speak its feelings—the utter impossibility of framing in words the feeling of admiration and love and respect and the debt of obligation we owe to the man who has just read to us this most admirable report, the last report, the final report, of his services in the capacity of Secretary of your Board. I, sir, feel my utter inability to do justice in any words of praise or laudation at my command. The only thing I can do is to move that this report be accepted, and printed in the usual way.

Motion seconded by Dr. J. M. Parrott, Kinston.

Dr. K. P. B. Bonner, Morehead City: I can not resist the temptation to express my deep feeling of appreciation of the report of Dr. Rankin. Having been associated with Dr. Rankin and on terms of intimate friendship for more than twenty years, and having been a member of his staff for more than two years, I feel that I am more in position to appreciate the man than the majority of us here, yet mere words are utterly inadequate to express the depth of my feelings. It is almost going from the sublime to the ridiculous to attempt to discuss a report of this character, and I can not express myself.

Dr. D. A. Garrison, Gastonia: I feel, as Dr. Bonner does, that I can not resist the temptation of expressing my feeling in this matter. I have been hearing these reports from year to year. We have been coming here for sixteen years, listening to this man, Watson Rankin, and to see the great development has struck me more than all the wonderfulness of this report, as compared to reports in the years back, and I wish to thank Dr. Rankin for his great work for North Carolina on all the lines he has touched.

Dr. Bonner: I should like to amend the motion for acceptance of this report so as to place this body on record as accepting it with a vote of thanks for Dr. Rankin's efficient, faithful, and untiring work during his sixteen years of service.

Motion carried by a unanimous rising vote.

Dr. Way, President: This Society, in this unanimous vote, expresses its love, its affection, and its respect for you, Dr. Rankin, as in the thirty-eight years of my acquaintance with it I have never seen it express it for any living man. God bless you and prosper you.

Dr. Rankin: This is a very awkward occasion, I expect, for this body; it certainly is for me. I have said about all there is to be said. I can not tell you how profoundly grateful I am for this expression of your affection and appreciation. It is the sort of thing to which I have just referred that will force any man that comes in contact with it to give his interest, his ideals, everything that is in him, and which will make what is accomplished really an expression of his friends rather than of himself. You know we are all, in a sense, idol worshippers. We have never gotten wholly away from that primitive state of being. We still allow our admiration for a great ideal or thought, some big thing, to revolve about some object with which it is associated but in most instances not the resultant of. Of course, this thing, the development of public health work, is the realization of your own deeper thoughts and ideals. It is your inspiration and encouragement that I have always needed, and had, and shall need all the more in this new work which I hope to do for you and our State. I am everlastingly and profoundly grateful.

Dr. R. S. McGeachy, Kinston: Speaking for the county health officers, I wish to extend to Dr. Rankin our deep and profound thanks for his assistance in our work.

Dr. J. M. Parrott introduced the following resolutions, which were unanimously adopted:

Whereas: Dr. W. S. Rankin has resigned as Secretary of the State Board of Health and State Health Officer, after having filled this important position with marked ability and fidelity for sixteen years; and

Whereas: His enthusiasm, lofty conceptions of duty, and far-sighted statesmanship have aroused our people, giving them a larger and finer vision of the importance of improving health conditions and the value of increasing human efficiency; and

Whereas: In spite of the fact that his public health policies have been largely of a pioneer type, he has made but few mistakes, which have been mistakes of good intention, and his achievements have been so outstanding as to completely overshadow his errors and to attract the attention of scientists throughout the world, bringing to him, and through him to the State, the honor of holding such positions as President of the American Public Health Association, President of the Conference of State and Provincial Health Officers

of North America, Field Director of the Committee on Municipal Health Department Practice of the American Public Health Association, etc.; and

WHEREAS: Although during the time he has held this office his manifold duties have greatly increased, his comprehensive and workable scheme of health activities, including such marked and outstanding features as public health education through pamphlets, bulletins, newspapers, etc.; sanitary oversight of hotels, restaurants, etc.; the development of a practical scheme of rural sanitation; the physical examination of school children, and many other agencies and plans for the betterment of the health of our people, has been so feasible as to create and develop a practical organization of such value as to give assurance of greater results in the future and of the continued gradual lowering of the death rate of the state—which rate is already one of the lowest in the Union; therefore

Be It Resolved:

First: That we join with national and international health authorities in honoring Dr. Rankin by passing these preambles and resolutions.

Second: That we greatly regret his retirement as Secretary of the State Board of Health and State Health Officer, and we assure him that we appreciate his labors and his worth.

Third: That we congratulate the Duke Foundation upon having secured Dr. Rankin for its work, and we pledge him our enthusiastic and loyal support in this his new and pioneer undertaking.

Fourth: That these resolutions be spread on our minutes, and that a copy be furnished to the State press and to Dr. Rankin.

NEW BUSINESS

The terms of office of Dr. Cyrus Thompson and Dr. D. A. Stanton as members of the State Board of Health having expired, they were re-elected, to succeed themselves.

The Conjoint Session then adjourned.

EXECUTIVE STAFF OF THE STATE BOARD OF HEALTH

W. S. RANKIN, M. D. ..... *Secretary and State Health Officer*
G. M. COOPER, M. D. ..... *Assistant Secretary*
E. F. LONG, M. D. ..... *Deputy State Health Officer*
H. A. TAYLOR, M. D. ..... *Deputy State Health Officer*
C. A. SHORE, M. D. ..... *Director State Laboratory of Hygiene*
H. E. MILLER, C. E. ..... *Chief of Bureau of Engineering and Inspection*
F. M. REGISTER, M. D. ..... *Deputy State Registrar of Vital Statistics*
M. L. TOWNSEND, M. D. ..... *Director Bureau of Health Education*

MINUTES OF THE HOUSE OF DELEGATES

TUESDAY, APRIL 28, 2:00 P. M.

The Section on Practice of Medicine met in joint session with the House of Delegates, to hear an address by Dr. H. W. Chase, President of the University of North Carolina, Chapel Hill, on "University Extension Work in Medicine."*

Dr. Wm. B. Jones, Greensboro, moved to appoint a committee of three, to serve two years, to work with Dr. Chase in devising a plan for the establishment of package libraries for physicians, such libraries to be distributed by the Extension Department of the University. This motion was carried.

The following committee was appointed by the President:

Dr. Foy Roberson, Durham
Dr. J. Howell Way, Waynesville
Dr. Wm. deB. MacNider, Chapel Hill

TUESDAY, APRIL 28, 2:30 P. M.

The House of Delegates was called to order by the President, Dr. Albert Anderson, and the roll was called by the Secretary-Treasurer, Dr. L. B. McBrayer. The following delegates were present:

County	*Delegate*
Alamance	C. W. McPherson
Alleghany	
Anson	
Ashe	
Avery	
Beaufort	
Bertie	
Bladen	D. D. Clark
Brunswick	
Buncombe	W. L. Grantham, J. B. Greene, F. W. Griffith, L. G. Beall
Burke	F. B. Watkins
Caldwell	A. A. Kent
Carteret	Ben F. Royal
Caswell	
Catawba	W. G. Bandy
Chatham	W. C. Thomas
Cherokee	
Chowan-Perquimans	L. P. Williams
Cleveland	
Columbus	
Craven	G. A. Caton
Cumberland	W. T. Rainey
Currituck	

*This address, in full, appears in the proceedings of the Section on Practice of Medicine.

Davidson	J. A. Smith
Davie	
Duplin	J. D. Robertson
Durham-Orange	George H. Ross
Edgecombe	J. M. Baker
Forsyth	O. P. Schaub, O. R. Keiger
Franklin	H. H. Johnson
Gaston	J. L. Blair, R. E. Rhyne
Gates	
Graham	
Granville	G. T. Sikes
Greene	
Guilford	C. W. Banner, J. W. Tankersley, H. L. Brockmann Wm. M. Jones
Halifax	
Harnett	J. W. Halford
Haywood	J. Howell Way
Henderson-Polk	Guy E. Dixon
Hertford	
Hoke	G. W. Brown
Hyde	
Iredell-Alexander	Thos. E. Anderson
Jackson	
Johnston	B. A. Hocutt
Jones	
Lee	W. A. Monroe
Lenoir	J. M. Parrott
Lincoln	L. A. Crowell
Macon-Clay	
Madison	
Martin	
McDowell	
Mecklenburg	T. C. Bost, J. C. Montgomery, J. P. Matheson B. C. Nalle
Mitchell-Watauga	
Montgomery	
Moore	H. E. Bowman
Nash	B. C. Willis
New Hanover	J. G. Murphy, J. B. Sidbury
Northampton	
Onslow	Cyrus Thompson
Pamlico	O. C. Daniels
Pasquotank-Camden-Dare	H. D. Walker
Pender	
Person	
Pitt	G. G. Dixon
Polk	
Randolph	C. A. Hayworth
Richmond	A. C. Everett

Robeson	
Rockingham	J. B. Ray
Rowan	C. M. Van Poole, R. V. Brawley
Rutherford	W. C. Bostic
Sampson	E. T. Hollingsworth
Scotland	
Stanley	
Stokes	
Surry	R. C. Mitchell
Swain	
Transylvania	T. J. Summey
Union	A. F. Mahoney
Vance	H. A. Newell
Wake	B. J. Lawrence, W. S. Cozart, V. M. Hicks
Warren	G. H. Macon
Washington-Tyrrell	
Wayne	W. H. Smith
Wilkes	E. M. Hutchins
Wilson	W. H. Anderson
Yadkin	
Yancey	

Dr. Cyrus Thompson moved that a member present from any county which had not sent credentials be allowed to represent his county as a delegate. Seconded and carried.

The President presented the following message to the House of Delegates:

PRESIDENT'S MESSAGE

ALBERT ANDERSON, M. D., RALEIGH

I have no message to bring to you except on the question of a whole-time executive secretary. I have studied this question carefully during the year and I wish to urge the importance of having a whole-time man in this work. I verily believe that after trying a whole-time man for one year you will see it is the best investment we have ever had for the work of building up the Society in every way possible. Financially we shall be stronger; educationally very much superior, because this man, as I pointed out this morning, can inject vitality into so many places that need it, that are dead, the way we have been running. I believe we can get this work done at a very nominal sum. The main objection that has been offered to me is that of putting up the dues. That is why I bring this before you, as any financial matter has to be handled by the House of Delegates. The increase in dues is the objection, but I believe now we have arrived at that period in North Carolina, within the last few years, that this ought not to stand in the way, and it will not, because we have been educated to pay out, through our civic clubs, very much more than this would cost us, and the additional expense, when you come to consider it, is only a trifle in your year's work and ex-

pense. So I hope we may start this work this year. I feel so strongly about it that if I had more money than I have I should suggest that a certain number of men, myself among them, finance this for the first year. I am willing to make a sacrifice, because I think we need this work to revitalize us in places where we are dead professionally. In some places in North Carolina the county societies are doing a very fine work, but there are only a few of these. If we had a whole-time man he could visit every county, and the central office could be made a bureau of information. His work could include, in part, this extension work and package library about which President Chase has just spoken, and he could do all this work in such a way as to build up our society in numbers. A few might fall out in the first year, but after this was tested out I think our numbers would increase. After considering the matter, I thought we would have to increase our dues from $3.00 to $10.00, for we might have a falling off in some places. But I believe if we could have a whole-time man in the field who could put this before the profession they would gladly pay the difference.

There is another matter I want to indorse. Our President last year recommended that we have the first meeting of the House of Delegates on Monday evening prior to the opening of the meeting on Tuesday. I think that is provided for in our present Constitution and By-Laws, and it would need action only by this assembly.

I leave these matters for your consideration.

The President's message was referred, for consideration, to the Committee on the President's Address.

The Secretary-Treasurer presented the following report, which was referred to the Finance Committee.

ANNUAL REPORT

OF THE

SECRETARY-TREASURER OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

The Secretary has notified all officers and committees of their election or appointment, and has performed all other duties assigned to him at the last session; he has also carried out all instructions and suggestions of the President.

Programs

A program has been mailed to every officer and member of the Society, and a post-card announcing the meeting, which was furnished, postage and all, by the Pinehurst management, has been mailed to every officer and member.

Errors in College and Date of Graduation

Another strenuous effort has been made to correct these errors. The co-operation of the American Medical Association was requested, and was refused for lack of funds and time. We then turned to Dr.

K. P. B. Bonner, Secretary-Treasurer of the State Board of Medical Examiners. Many of you may not know that the early records of the licentiates of the Board were not very complete, even some of our past presidents and former members of the Board of Examiners not appearing as being legal practitioners, and that Dr. Bonner, acting for the Board of Medical Examiners, secured the passage of laws necessary to enable him to collect the needed information. With his own hands he did the work and corrected the records of the legal practitioners of medicine in our State. He has very kindly checked over last year's roster of members, and we feel that we shall be able to present this roster in correct form in the forthcoming volume of Transactions. This work is not a thing that can be delegated to clerks, be they ever so good, and it required many years of arduous labor for Dr. Bonner to do this work. Our sincere appreciation and thanks are hereby tendered, in which I am sure the entire profession joins.

Membership

We are pleased to chronicle another slight gain in membership. The total membership for 1924 was 1616, against 1592 for the previous year. The total membership this year to April 24th is 1458.

Delinquent Counties

Beaufort County has made no report for this year and no member in said county has paid dues for 1925. It is therefore not entitled to representation in the House of Delegates or to take part in the scientific or other proceedings of this session. (Made report during session.)

Status of Membership of County Societies

One—Mecklenburg—has 117 members and is therefore entitled to five delegates.

Two—Buncombe and Guilford—are entitled to four delegates.

One—Wake—is entitled to three delegates.

Four—Forsyth, New Hanover, Durham-Orange, and Rowan—are entitled to two delegates.

All others that are in good standing are entitled to one delegate.

Number of county societies with more than 100 members, 1; Number of county societies with more than 75 and less than 100, 2; Number of county societies with more than 50 and less than 75, 2; Number of county societies with more than 25 and less than 50, 8; Number of county societies with more than 15 and less than 25, 15; Number of county societies with more than 10 and less than 15, 24; Number of county societies with more than 5 and less than 10, 22; Number of county societies with from two to four members, 9; Number of county societies with one member, 6.

Past President's Jewel

The Past President's Jewels, referred to in the report of the Secretary-Treasurer last year (page 90, Transactions), have been received and distributed to the Past Presidents entering the agree-

ment. Dr. Albert Anderson, the retiring President, has also procured one. We think the design is very pleasing and in keeping with the dignity of our profession. We feel that it would add much to the sentimental value of the jewel if the Society would present it to the retiring president. The making of the die, and the jewels, so far, have been of no expense to the Society, and I am sure I can say for those who own the die that they will gladly donate it to the Society if they should decide to carry out the suggestion mentioned above.

Liability Insurance

The President and Secretary have given considerable time and thought to this matter during the year, and we have been promised that a representative of the Ætna Insurance Company would be here to present a plan of group insurance that would save our members $9.00 each annually on a $10,000 policy. If one thousand doctors carry this insurance it would save to that group $9,000 annually—more than twice the total income of our Society from dues. There are some objections to this kind of indemnity insurance, but it is my opinion that the Society could be of real service to its members along this line.

The President, Dr. Albert Anderson, has been a most untiring worker during the year, and has devoted much time and much earnest thought to the affairs of the Society and the profession. It has been a great pleasure to co-operate with him.

Finances

The report of the financial transactions of this office is appended hereto, with a certificate showing balance on deposit with the Page Trust Company, Aberdeen.

Respectfully submitted,
(Signed) L. B. McBrayer, M. D., F. A. C. P.,
Secretary-Treasurer.

FINANCIAL STATEMENT

April 12, 1924, to April 24, 1925

RECEIPTS

Balance April 12, 1924	$1,711.15
Borrowed from Page Trust Co., Dec. 29, to meet balance due for printing Transactions	350.00
Dues collected	5,602.50
Sale of Transactions	15.07
J. W. Long, printing section American College of Surgeons	100.44
Stenographic service, etc.	52.05
Total receipts	$7,831.21

DISBURSEMENTS

Check No. 213—Dr. L. J. Butler, refund dues	$ 3.00
Check No. 214—Silas W. Nourse, lantern slides	21.50
Check No. 215—Void	
Check No. 216—Dr. V. M. Hicks, express on lanterns to Raleigh meeting	3.76
Check No. 217—Sou. Medicine & Surgery, programs	91.00
Check No. 218—Western Union Tel. Co., April acct.	5.02
Check No. 219—Miss Mary Robinson, reporter	60.00
Check No. 220—N. C. Sanatorium, 'phone calls	2.90
Check No. 221—Dr. B. D. Moore, refund on dues	.50
Check No. 222—Thos. H. Jewett, reporter	85.00
Check No. 223—Palmer E. Bailey, reporter	5.00
Check No. 224—Western Union Tel. Co., May acct.	.35
Check No. 225—Carolina Tel. & Tel. Co., May acct.	2.30
Check No. 226—Dr. J. H. Fonts, refund of dues	2.00
Check No. 227—N. C. Sanatorium, postage	5.00
Check No. 228—Western Union Tel. Co.	3.02
Check No. 229—Capital Printing Co., letterheads	62.31
Check No. 230—Mary Bulla, stamps	5.00
Check No. 231—Void	
Check No. 232—Mary Bulla, stamps	10.00
Check No. 233—Miss Annie Eaton, sten. work	25.65
Check No. 234—Dr. J. S. Hooker, refund of dues	3.00
Check No. 235—Western Union Tel. Co., July acct.	.60
Check No. 236—Miss Mary Slater, sten. work	24.00
Check No. 237—Miss Algene Edson, sten. work	6.00
Check No. 238—Miss Mary Robinson, reporter	50.00
Check No. 239—Miss Mary Robinson, reparter	236.60
Check No. 240—Miss Annie Eaton, sten. work	75.00
Check No. 241—Western Union Tel. Co., Aug. acct.	1.50
Check No. 242—Dr. H. B. Ivey, refund of dues	3.00
Check No. 243—Dr. W. H. Cobb, refund of dues	3.00
Check No. 244—Dr. Wm. H. Smith, refund of dues	3.00
Check No. 245—Dr. G. B. Morris, refund of dues	3.00
Check No. 246—Dr. C. C. Henderson, refund of dues	3.00
Check No. 247—Dr. W. G. Sutton, refund of dues	3.00
Check No. 248—Dr. E. Cooper Person, refund of dues	3.00
Check No. 249—N. C. Sanatorium, tedephone call	.70
Check No. 250—Miss Amy Emanuel, reporter	155.55
Check No. 251—Western Union Tel. Co., Sept. acct.	.30
Check No. 252—Dr. L. B. McBrayer, salary Sec.-Treas.	400.00
Check No. 253—Void	
Check No. 254—Western Union Tel. Co., Nov. acct.	.36
Check No. 255—Silas W. Nourse, photo.	1.03
Check No. 256—Brown-Morrison Co., Transactions for 1924	1,981.00
Check No. 257—Brown-Morrison Co., postage for mailing 1606 copies Transactions	136.20
Check No. 258—D. G. Stutz, freight, Transactions	4.24

Check No. 259—Page Trust Co., int. on $350.00, ninety days	4.50	
Check No. 260—Brown-Morrison Co., balance due on contract	75.00	
Check No. 261—Brown-Morrison Co., balance due on postage	15.70	
Check No. 262—Void		
Check No. 263—Foss & Morris, 1700 membership cards	9.88	
Check No. 264—N. C. Tuberculosis Association, postage Dec. to Feb.	28.45	
Check No. 265—Western Union Tel. Co., Feb. acct.	.60	
Check No. 266—Dr. L. B. McBrayer, salary Sec.-Treas.	200.00	
Check No. 267—Jones-Stone Printing Co., letterheads and envelopes for H. H. Bass, Ch'm Surgery, Hendderson	9.00	
Check No. 268—Mary Bulla, postal cards	1.00	
Check No. 269—Page Trust Co., $350.00 note	350.00	
Check No. 270—Mary Bulla, postal cards	1.00	
Check No. 271—Western Union Tel. Co., Mch. acct.	.30	
Check No. 272—Mary Bulla, postage	20.00	
Check No. 273—D. G. Stutz, express programs, etc.	4.90	
Check No. 274—Mary Bulla, postage	10.00	
Check No. 275—Mary Bulla, postage	5.00	
Check No. 276—Miss Mary Slater, office work	2.05	
Check No. 277—Page Trust Co., for certificate of deposit	3,000.00	
	$7,227.86	
Check of G. F. Bullard returned May 29, after having been credited	3.00	
		$7,230.86
Balance April 24, 1925		$ 600.35
Checks outstanding:		
No. 197	$1.00	
No. 273	4.90	
		5.90
Balance Page Trust Co.		$ 606.25

DISTRIBUTION OF EXPENSES

Dues refunded, paid twice	$ 29.50
Postage, express, telephone, telegraph	112.06
Stationery and office supplies	81.19
Reporting Raleigh meeting	592.24
Printing Transactions, 1924	2,212.14
Salary Secretary-Treasurer	600.00
Clerical work	132.70
Programs, 1924	91.00
Interest on loan	4.50
Lantern slides and photo	22.53
Credit on $350.00 loan	350.00
Certificate of deposit—from checking to savings account	3,000.00
	$7,227.86

April 24, 1925.

This certifies that the Medical Society of the State of North Carolina, Dr. L. B. McBrayer, Secretary-Treasurer, has on deposit here:

Certificate of Deposit	$3,000.00
Checking account	606.25
	$3,606.25

PAGE TRUST COMPANY,
By D. I. McKEITHEN.

THE PRESIDENT: I see the Secretary-Treasurer has been at work, too. I can testify to that. I think I have never worked with a more faithful officer. He is devoted to the interests of the Society.

The following report of the Committee on Constitution and By-Laws was read by Dr. C. M. Van Poole, Chairman, and was acted upon section by section, all sections being adopted except the last.

REPORT OF COMMITTEE TO REVISE THE CONSTITUTION AND BY-LAWS OF THE SOCIETY, AND TO CONSIDER RECOMMENDATIONS OF SOME OF THE PAST PRESIDENTS

Your committee appointed to revise the Constitution and By-Laws of the Medical Society of the State of North Carolina, also to consider recommendations of some of the past Presidents, beg leave to submit the following:

After carefully reviewing the Transactions of the House of Delegates of the last twenty-two years, we find that all important changes and additions to the Constitution and By-Laws during this period of time have been properly incorporated in the same.

After consulting with a number of the best informed members of the Society relative to this matter, we are convinced that but few changes to the Constitution and By-Laws are necessary at this time.

Relative to the recommendations of the Past Presidents which have not been disposed of, we beg to offer the following:

1. As regards a President elect, your committee, after due deliberation, fails to see the need of such officer, and therefore recommends that Art. VIII, Sec. I, of the Constitution be not changed.

2. That to Chap. III, Sec. IV, of the By-Laws be added the following: "Provided that the terms of this section shall not apply to invited guests."

3. That the latter clause (that in parenthesis) of Chap. IV, Sec. VII, be eliminated.

4. That to Chap. 10. Sec. I, the following be added: "Provided that the President, in making his appointments of chairmen

of sections, shall give due consideration to the recommendations offered by the respective sections."

5. That the latter part of Chap. IV, Sec. I, be eliminated, and the following substituted therefor: "The first meeting of the House of Delegates shall be held at 8 P. M. the day preceding the meeting of the Society, at which meeting as much as is possible of the business of the House shall be transacted."

6. That the following section be added: Chapter 14, Section 14: In view of the fact that it costs physicians and surgeons to make reports of past or present illness of disability of patients to corporations, companies, or others, we deem it fair and just that a fee be charged for such reports, the amount of said fee to be determined by the local county medical society, and that no such reports be made without the consent of the patient.

(Signed) C. M. Van Poole,
C. W. Banner,
D. A. Garrison.

There was some discussion on the fourth section of this report, the Mecklenburg County delegation requesting that the Section on Chemistry, Materia Medica, and Therapeutics meet with the Section on Practice of Medicine, because of the poor attendance on the former section. Dr. Cyrus Thompson stated that this could be done by the secretary in arranging the program. Dr. J. Howell Way then moved the addition of a section to be termed "North Carolina Section of Medical Veterans of the World War and Medical Officers' Reserve Corps," which motion was seconded and carried. Two votes in the negative were recorded.

The fifth section of the report was adopted upon motion of Dr. Cyrus Thompson, seconded by Dr. Wm. M. Jones, after discussion by Drs. G. T. Sikes; Wm. M. Jones; L. B. McBrayer, Secretary-Treasurer; A. A. Kent. Two votes in the negative were recorded.

The last section of the report, in regard to making reports to corporations, etc., was discussed by Drs. G. T. Sikes; A. A. Kent; W. A. Monroe; J. M. Parrott; J. W. Tankersley, and W. L. Dunn. It was then tabled upon motion of Dr. J. Howell Way.

The report was then adopted as a whole, with the exception of the last section.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Mr. President and Fellow Members of the North Carolina Medical Society:

The Committee on Public Policy and Legislation beg to report that they, together with our President, and several members of the State Board of Health and the State Board of Medical Examiners, met in Raleigh at the opening of the legislature, and, after going over the field, decided that it would not be wise to offer any new legislation, but to keep a watch on everything that might come up from the outside.

Later a bill was introduced to license Naturopathic physicians and give them nearly all the privileges of the regular profession. With the assistance of many patriotic physicians, who did service at home and who came to Raleigh, we were able to kill the bill by a unanimous vote at its first committee hearing.

Respectfully submitted,

(Signed) W. A. Monroe,
A. A. Kent.

After reading the above report, Dr. Monroe, Chairman, stated that the matter of the increase in the State annual license fees had been taken up by him personally with the Finance Committee of the last legislature, but as they were taxing others he had not seen fit to ask them to make any change.

This report was accepted.

REPORT OF COMMITTEE ON PUBLICATION

Dr. L. B. McBrayer, Secretary:

After considerable shopping and a good deal of work, we were able to secure the printing of the Transactions at a decrease in cost of about $500 last year again, and that is where the surplus came from.

This report was accepted.

REPORT OF COMMITTEE ON FINANCE

Dr. A. C. Everett, Chairman, made the following report, which was accepted:

The Finance Committee has examined the report submitted by the Treasurer and finds the same correct.

REPORT OF BOARD OF COUNCILORS*

Dr. W. A. Monroe, Chairman, reported that the Council recommends that Dr. William McKim Marriott, of St. Louis, our guest at this meeting, be elected to honorary membership in the Medical Society of the State of North Carolina, and offered a motion to declare Dr. Marriott so elected. This motion was carried.

Dr. J. M. Templeton, of Cary, then asked to be heard, and was granted permission to speak to the House. Dr. Templeton stated that he was a member of the Board of Councilors which was regularly elected in 1922, to serve three years, and that at the last meeting (Raleigh, 1924) nominees for a new Board of Councilors were reported by the Nominating Committee and were elected. He asked to be instructed as to who are the Councilors.

Dr. J. M. Parrott offered a motion stating that it is the sense of the House of Delegates that the Board of Councilors regularly elected three years ago be recognized as the Board of Councilors until the expiration of their term. This motion was seconded by Dr. Cyrus Thompson and carried unanimously, after discussion by Drs. B. J.

*The report of the chairman of the retiring Board of Councilors was presented at the next session of the House of Delegates.

Lawrence and B. J. Witherspoon, the President, Drs. J. M. Parrott, Cyrus Thompson, A. A. Kent, D. A. Garrison, V. M. Hicks, J. C. Grady, M. R. Adams, W. A. Monroe, W. J. Hunnicutt, H. D. Walker, and G. T. Sikes.

Dr. Parrott then moved that the acts of the gentlemen who, under a misapprehension, were acting as Councilors be validated, and that the House of Delegates express its confidence in these gentlemen as officials or pseudo-officials of the Society. Seconded and carried, with one vote recorded in the negative.

First District—Dr. H. D. Walker, Elizabeth City, Councilor.

The First District Medical Society, composed of ten counties, has had four meetings during the past year. On account of the geographical location, Albemarle Sound separating the counties in the First District, and the schedule of the trains, it is very inconvenient to have a meeting on the south side of the sound unless the members on the north side are away from their work a day and night. The members on the south side can leave home in the afternoon and return the same night. For this reason the First District Medical Society meets either at Elizabeth City, Hertford, or Edenton. During the past year we have had meetings at the above places; last July at Elizabeth City; January 15th at Hertford, and April 17th at Edenton. The next meeting will be at Elizabeth City some time in July. A program committee is appointed by the president, whose duty it is to select two to four members to prepare papers for the coming meeting. The papers are carefully written, and generally deal with the diseases most common in our section at that particular time of the year. Every paper is discussed thoroughly, and those attending enjoy the meetings socially and are no doubt benefited by the reading and discussion of the various papers.

More than half of the counties in the First District have only from two to four physicians, hence it is necessary to have two or more counties forming a county medical society. Even then it is sometimes very hard to have regular monthly meetings. I have noticed since we have been having the district meetings quarterly the physicians attend these meetings more regularly than the county society meetings, so, in the counties where there are only a few physicians, the district society is taking the place, in some respects, of the county society.

As Councilor of the First District, I have had no questions or appeals referred to me during the past year, and so far as has come to my knowledge all is peace and harmony in the First District.

Second District—Dr. Grady G. Dixon, Ayden, Councilor.

I thought everything was going well in the Second District. We have had two meetings, which were well attended, and every county society in the district is functioning. I thought Beaufort County was one of our good societies, but I notice the Secretary-Treasurer says it is not functioning. They have good meetings, with good papers, and serve a wonderful repast, and I thought they

were all right. I suppose they got so happy at the last meeting that they forgot to send in their dues.

Third District—Dr. E. S. Bulluck, Wilmington, Councilor.

We have had two meetings, one of which was at Wrightsville Beach in the form of an oyster roast. At the other meeting we had an address by Dr. P. P. McCain, of the State Sanatorium, in an endeavor to improve our work in tuberculosis. I think the district is in good condition.

Fourth District—Dr. J. C. Grady, Kenly, Councilor

I have visited the following counties in the Fourth District and herewith submit the following report:

NASH COUNTY

I visited the Nash County Medical Society at their mid-winter session, which was held in Rocky Mount in December conjointly with the Fourth District Medical Society and the Seaboard Medical Association. The meeting was held in the assembly room of the Rocky Mount Chamber of Commerce, and was well attended by the members of the Nash County Society and by quite a number of the members of the Fourth District Society and the Seaboard Medical Association. The papers read were of a very high order and very thoroughly discussed, not only by the members of the Nash County Medical Society but by the visitors as well, who were extended the courtesies of the floor. Notable among the speakers at this meeting was Dr. Cyrus W. Thompson, of Onslow County, who in his inimitable way gave us some very illuminating and humorous remarks on diseases of the prostate, he, as he claimed, having passed from the static to the prostatic age and knowing all about it. The meeting was a success in every respect, especially the dinner, which was served at the Rocky Mount Country Club by the Nash County Medical Society. This society should be rated as at least ninety-eight per cent efficient as to attendance, harmonious working conditions, and the high scientific quality of the papers presented.

WILSON COUNTY

A warm reception was accorded me in Wilson County at their county society meeting, which was held in the assembly rooms of the Chamber of Commerce in the town of Wilson, at which time they took up the subject of the prevention and treatment of tuberculosis. In a very able paper presented by Dr. E. G. Moore, of Elm City, this subject was handled in a masterful way. The subject of mental hygeine was very tactfully presented by Dr. Albert Anderson, President of the State Medical Society and also Superintendent of the State Hospital for the Insane at Raleigh. These subjects were freely discussed by all of the physicians present at this meeting. I think Wilson has a well organized and effective County Medical Society that is making much progress along all lines, which, of course, is characteristic of Wilson county doctors in all that they undertake.

EDGECOMBE COUNTY

In Edgecombe the meeting was held in Tarboro. This society boasts a membership of eleven, and all seem to be wide-awake and thoroughly interested in their society. The papers were exceptionally good, and were freely discussed by a number of the members present. I think that this is a medical society of much promise, as most of its members are young men who seem to be very much interested in their work.

WAYNE COUNTY

In Wayne County I met a very clever membership of twenty-eight men who seemed very enthusiastic in their society work, thoroughly organized, and very much in love with their society. The President, Dr. W. H. H. Cobb, presided with dignity and decorum and obtained a very full discussion of some exceedingly valuable papers, especially one on the treatment and prevention of cancer, by Dr. Ivey. The discussions were very thorough and enthusiastic, and I think this is really the banner society that I have visited for pep and enthusiasm. However, there seemed to be some friction between this society and the policy of the county health officer. There appeared to be right much opposition to state medicine.

NORTHAMPTON AND HALIFAX

I have not been able to arrange a meeting with these societies, having written to several of the profession in these counties and obtained no response to my communications. No information came to me as to whether or not they were maintaining any county organization. For these reasons I am unable to make further report on the situation in these counties.

JOHNSTON COUNTY

In my own county, Johnston, we have a working membership of twenty-two physicians, who meet with reasonable regularity, but our county does not seem to exhibit as much enthusiasm in medical activities as they should, and I think improvement could be made. We have a splendid president in the person of Dr. L. D. Wharton, but I am afraid that our membership is a little backward as to scientific work. We have a few members who go to the northern centers almost every year and do some post-graduate work, which is a very hopeful sign, and at this meeting Dr. J. B. Person read a very instructive paper on the treatment of influenza with large doses of urotropin, which was very much enjoyed by the members and very freely discussed. Drs. Hocutt and Myerberg read some very interesting papers.

GREENE COUNTY

On the first Wednesday in April, 1925, I visited the Greene County Society, which met at Snow Hill in Dr. Harper's office. Dr. Edwards of Hookerton presided. They had a very interesting meeting, the main topic of discussion being diabetes, which was freely discussed by all and was especially well covered in a dis-

cussion by Dr. Murphy, who brought out some very interesting points in regard to its treatment with Insulin.

Greene is a small county and has only six physicians. All of these were present at the meeting of their society except one. The most perfect harmony and good fellowship prevail in this society.

The foregoing report indicates that some of our counties are not taking a very active interest in either the county or district societies, and I think with proper suggestions and assistance from the state organization and co-operation of the societies of the neighboring counties interesting meetings might be arranged in these counties, to the end that eventually every doctor would become an active member of his society and would take an active interest in the affairs of his county, district and state organizations.

A visit to each county society by the president of the State Society, as well as by the district councilor, together with a well arranged program for a meeting to be held at the time of such visit, would awaken every doctor to his duty to his society, and would in the end result in not only a large membership but a large and active attendance on the meetings.

Fifth District—Dr. W. A. Monroe, Sanford, Councilor.

The Fifth District Society is in good working order. It holds two meetings a year, the mid-summer meeting usually being held at the State Sanatorium, the mid-winter meeting with one of the county societies. A good program is prepared and a good dinner is always served. At our last meeting we were delightfully entertained at a barbecue dinner served by Dr. R. L. Pittman, of the Cumberland County Medical Society, at his beautiful summer place, "The Sonke Club."

I have not been able to visit all the county societies, but from a kind of a stock taking, questionnaire and otherwise, I have been able to learn the conditions existing in my district. I find that harmony and good fellowship prevail generally throughout the district; that every county has an organized county society; that over 95 per cent of the active practicioners belong to the county societies; that four counties now hold monthly meetings, four meet quarterly, and the remaining two try to meet semi-annually; that interest in scientific work and attendance bear a direct ratio to the frequency of the meetings held.

I cannot refrain from mentioning the fine and inspiring report from the Cumberland County Society. They meet once a month, usually at night, and usually have 100 per cent attendance; issue programs in advance; always have interesting papers and discussions, and serve supper. They have increased their annual dues to $12.00 a year to take care of incidentals and refreshments.

So far as I can learn there are not over a half-dozen active practicing physicians in the district who are not members of their county societies. There are, however, a few good old family doctors who, on account of age and perhaps other circumstances, have allowed

themselves to become non-affiliated. It will be my purpose during the coming year, with the assistance of the county societies, to look up all such and try to reclaim them, in order that future generations may find them properly recorded in our books.

Sixth District—Dr. V. M. Hicks, Raleigh, Councilor.

The annual meeting of the Sixth Councilor District Medical Society was held Thursday, June 26, 1924, in Oxford. At this meeting twelve papers were read and freely discussed. It was a most enthusiastic meeting, and the scientific program, as well as the social program, was unusually attractive. The district society has a membership of two hundred and six. The President of the state society, Dr. Albert Anderson, attended this meeting, as well as Dr. L. A. Crowell.

It has been a pleasure to the Councilor to attend at least one meeting in each county during the year, and to re-organize a county society in those counties in which regular meetings were not held. The importance of organization has been stressed at each meeting, and this point has received a most favorable reception. The district has been unusually fortunate in having the President of the State Medical Society within it, and the President has been so good as to visit five county societies in our district during the year.

The Councilor is very happy to report the organization of the Sixth District to be in very good condition, with possibly one exception. It is our hope in the very near future to hold two meetings annually of the district society.

Sixth District—Dr. J. M. Templeton, Cary, Councilor.

(Upon motion of Dr. Hicks, Dr. J. M. Templeton was requested to report.)

Dr. Hicks stated that we had a good meeting in Oxford. We did. It was one of the best ever held in our district. So far as I know, the profession in that district is in good condition. My own county is in insurrection against the State Medical Society and is defying its official representative in spite of all I can do to the contrary. I make that as my report. An appeal was taken from the action of the Wake County Medical Society and carried to me as Councilor. I decided that appeal and directed the Wake County Society to conform to the law. It refused to do so. I carried that matter to the State Council, which sifted it from top to bottom. In fact, we took up practically all the time of the Raleigh session in investigating the question as to whether the Councilor was right in his decision. When it came to a vote I was sustained, and the Wake County Society was ordered to conform to the order of the State Council. It absolutely refused to do so, and threatened secession. I should therefore like to report that county as being in a state of insurrection.

Seventh District—Dr. T. C. Bost, Charlotte, Councilor.

The annual meeting of the Seventh District Medical Society was held in Wadesboro, October 7, 1924. This was a very interesting

and instructive meeting. Eighteen papers were read and fully discussed. Over a hundred members were present.

A banquet was given to the society at the National Hotel by the Anson County Medical Society, which was greatly enjoyed and highly appreciated by the members.

Dr. Chas. I. Allen, Wadesboro, was elected President; Dr. Charles H Pugh, Gastonia, Vice-President; and Dr. Raymond Thomson, Charlotte, Secretary. The next meeting will be held in Gastonia, October 7, 1925.

I have visited all of the county medical societies in the district, and find that they are all organized and are holding regular meetings except in Anson and Lincoln Counties. These counties are organized but do not seem to be actively functioning owing to a small membership. Lincoln County, together with two adjoining counties, has formed a Tri-County Society which holds regular meetings. The members of the Anson County Medical Society attend meetings in the surrounding counties.

Dr. M. F. Boyles, Dallas; Dr. F. V. Taylor; Stanley; and Dr. T. A. Smith, Charlotte, were all convicted of violating the Harrison Narcotic Act during the April (1925) term of Federal Court and sentenced to Atlanta Federal Prison. Otherwise no irregular practice or other difficult problems have come to my attention.

A spirit of harmony and coöperation prevails among the men, and much interest has been shown in the medical societies during the year throughout the district.

Eighth District—Dr. F. R. Taylor, High Point, Councilor.

The present councilor for the Eighth District was appointed to fill the vacancy caused by the resignation of Dr. W. F. Cole. He felt it wise to keep a notebook in order that the results of his work might be kept more accurately, and that his successor might have some data on which to begin his work in case he, like the present incumbent, should have to take it up without previous experience in the work of a councilor. What follows is a condensation of the notes mentioned.

WILKES COUNTY

August 14, 1924. Visited Wilkes County. Found a rather unfortunate situation. The Wilkes County Society had not met in nearly two years. The reason given for this was that a few of the older men had some feeling against a young man who had opened a hospital there. One of the older men, who said that he had never been to the young man in question to frankly discuss any difficulties that had arisen, was urged to do this, and was persuaded to read certain passages from Osler's "Aequanimitas and Other Addresses" bearing on the difficulties that may arise between doctors, and the great responsibility of the older men with regard to constructive leadership in the medical profession was emphasized. At the conclusion of our conference he agreed to call the society together in

the near future to try to start it into activity once more. The young man in question was also interviewed. He seemed to be very desirous of doing the right thing, and greatly worried over the feeling that existed against him. This feeling has caused him to retain his membership in the society of a county where he formerly practiced, rather than to seek a transfer to the Wilkes Society. He seemed to be doing a great service in Wilkes by running the only hospital within about forty miles, and he is a well trained, competent man.

I have learned since starting this report that the Wilkes Society has met several times in recent months, elected new officers, and that interest in society work has definitely re-awakened.

ASHE COUNTY

August 14, 1924. Visited Ashe County. Found a very interesting situation. There seem to be only five graduate physicians in all of Ashe County, two of whom are located in West Jefferson. The other three are in rather remote and inaccessible sections, which would preclude regular attendance at meetings held at West Jefferson. An active county society seems well-nigh impracticable at present, owing to the small number of doctors. Those who are there seem to be working in harmony, at least so far as graduate physicians are concerned. The opening of a new good road to West Jefferson augurs well for the future development of that section, and thus for an increase in the medical population and the consequent development of a nucleus for a county society.

A difficult problem in Ashe is that of certain non-graduate physicians practicing under limited license. Both Drs. Reeves and Ray, the two graduates located in West Jefferson, stated that some of these non-graduates tend to practice beyond the territorial limits assigned them, and that it was even reported that one or two of them were considering locating in the town of West Jefferson. I was further informed that at one time a county society existed in Ashe, and that the non-graduates were permitted to attend its meetings, which seemed highly desirable, but that they in time came to control the society, and that at one time a non-graduate was president of the society! Both the physicians in West Jefferson, and, I understand, all the graduate physicians in the county, feel that, with the immediate promise of more or less rapid development of that section, the time is past when limited licenses should be issued to non-graduates to practice in Ashe County. Your councilor agrees with this view, and respectfully suggests that the matter be brought to the attention of the Committee on Public Policy and Legislation.

YADKIN COUNTY

August 15, 1924. Visited Yadkin County. There are nine doctors in the county, one of these being not in practice. Two physicians are located in Yadkinville, the county seat. There seem to be no serious differences between physicians anywhere in the county, and the county society has been organized and reorganized a number of

times, only to die down from indifference brought about by the small number of men able to attend meetings. The suggestion was made that, although formal papers could not easily be read to an audience of three or four, a journal club conducted on a very informal basis seemed to offer certain attractive and practical features on which to base the work of the county society. After discussing this idea with the Yadkinville men, Dr. Harding, of that town, volunteered to call the physicians of the county together to try to organize some kind of society work.

ALLEGHANY COUNTY

September 19, 1924. Visited Alleghany County. There are only five or six doctors in the county, and there has never been a medical society in the county, so far as could be learned. The roads are now for the first time passable in bad weather, and promise rapid development of this section. Dr. Doughton, the oldest member of the Sparta profession, being away, Dr. B. O. Choate was interviewed. He proved most desirous of getting some kind of county society organized, and stated that he would gladly co-operate with Dr. Doughton in starting one. He approved the idea of informal society meetings in the shape of a journal club. A letter was left for Dr. Doughton, going into this matter, and soliciting his aid in starting a county society.

SURRY COUNTY

September 19, 1924. Visited Surry County. Saw Dr. R. R. Garvey, President of the Surry County Society. Made no attempt to attend a meeting of the Surry Society, as the district meeting is to be held in Surry in November. The Surry Society is doing excellent work, with 25 or 26 members. It meets some times in Mt. Airy and some times in Elkin. There is also an annual picnic of the society. The average attendance at meetings is 8 or 10. The members co-operate in a gratifying way. One problem seems to be giving a little trouble in Surry, and that is the presence of two or three contract physicians. These men are working for a particular community in which certain persons serve as guarantors of a specified salary to the contract physicians. The Surry Society has not admitted these contract physicians to membership, and the members have agreed not to consult with them, on the ground that contract practice of this type lowers the standards of medical practice in the county. Unless satisfactory evidence to the contrary is shown, it seems reasonable to assume that the Surry County Society is justified in this attitude towards a situation with which they are thoroughly familiar.

STOKES COUNTY

October 24, 1924. Attended a meeting of the Stokes County Medical Society at King. Four out of eight members were present. Dr. C. S. Lawrence, of Winston-Salem, was also present, by invitation, and gave a good talk on the early diagnosis of certain surgical affections of the abdomen.

Stokes seems to have the usual problems that confront a society in a sparsely settled district. Meetings appear to have been held irregularly, and, according to the members, seem on the whole to have been rather unprofitable, as it has been difficult to get anyone to work up a scientific program, there often being no program at all. After a free discussion by all present of various means to improve matters, the members finally decided to take under consideration the idea of skeletonizing their county society, meeting once a year to keep up their organization, and at any other time when any matter of special interest presents itself, and also attempting to attend with as much regularity as possible the meetings of the Forsyth County Society, where they felt they could get better scientific programs. Dr. Lawrence agreed to bring up at the next Forsyth Society meeting the matter of having the Stokes doctors put on the Forsyth mailing list. At best, this should be a temporary expedient, but it seemed wise to try it out at this time, as it was what the members felt was the best arrangement that could be made.

DISTRICT MEETING AT MT. AIRY

November 13, 1924. Attended the District Meeting at Mt. Airy. It was a very fine meeting. Dr. Stuart McGuire, of Richmond, Va., was the guest of honor. About 75 men attended the scientific and business meetings, which were held in the afternoon. The President, Dr. J. B. Smith, of Pilot Mountain, was in the chair. Dr. Moir Martin, of Mt. Airy, was secretary. After an excellent scientific program, Winston-Salem was selected as the next meeting place; Dr. Wingate Johnson, of that city, was elected president for the next six months, and Dr. J. M. Davis, also of Winston-Salem, secretary. After the meeting, the Kiwanis Club of Mt. Airy entertained the district society royally at supper, Dr. Martin acting as toastmaster.

ROCKINGHAM COUNTY

December 29, 1924. Visited Rockingham County, and saw Drs. Fetzer and Taylor, the president and immediate past-president, respectively, of the County Society. The situation in Rockingham is encouraging. Up until the present, meetings have not been held every month, owing largely to the fact that the profession of Rockingham, while fairly numerous, is rather widely scattered. Four meetings were held during the past year, at all of which good papers were read and refreshments served. The attendance at these meetings was quite remarkable—20 or more out of a membership of 27. Some meetings were called but prevented by bad weather. Early in December a meeting was held at which the society was reorganized, and it was determined to hold regular monthly meetings henceforth at one of the four following places: Madison, Wentworth, Reidsville, Leaksville. There is notable freedom from professional jealousy in the county.

I was later invited to a meeting of the Rockingham Society in Reidsville, but found it impossible to attend.

RANDOLPH COUNTY

January 20, 1925. Visited Randolph County. A meeting was supposed to be held in Asheboro on this date for the annual election of officers, and your councilor had been asked to talk on medical ethics. Owing in part to prolonged hard rains, the attendance was so small that the election was deferred. Four members were present, only one being from Asheboro. A very informal talk was given on the social, educational, and ethical functions of a medical society, and extracts from a number of Osler's addresses read.

Only four meetings of the Randolph Society were held in 1924. These were fairly well attended, and scientific programs given at all. There seemed, however, to be a definite feeling on the part of those present that the society had not functioned as it should during the past year. The reasons for this were not clearly brought out. It was stated that a few years ago the meetings were very active and profitable, the programs consisting largely of the reading and free discussion of the Massachusetts General Hospital Case Reports, but that interest in the society and its work had gradually dwindled, until the situation had reached a point where a few members who earnestly desire an active society were seeking some plan whereby they might attend, join, or even amalgamate their society with, some other county society, e. g., Guilford. Your councilor could not feel that amalgamation of the two societies would be advisable, but stated that any and all members of the Randolph Society are at all times welcome to attend the Guilford meetings. The fact that Randolph has had a good society in the past, however, means that a good society is still possible there, and it would seem inadvisable to let the society there go to pieces. In conversation with the president of the Randolph Society on a previous date, it was learned that meetings are nearly always held in Asheboro, yet recently the attendance has been chiefly by physicians from outside of Asheboro. This problem is somewhat baffling at present, but it is hoped that time will clear it up and put the society back on a more active and useful basis.

FORSYTH COUNTY

February 10, 1925. Attended a meeting of the Forsyth County Society. Out of 63 members, 25 were present. An excellent feature of the meeting was the giving of everyone present the opportunity to briefly report clinical cases of interest. Two excellent papers were ably presented and discussed. The business of the meeting was transacted with efficiency and despatch. The society seems to be flourishing, and encouraging medical work of a high order.

GUILFORD COUNTY

Being a member of the Guilford Society and having been president in 1924, your councilor is in closer touch with it than with the other societies in the district. The general spirit and activity of the society has been very gratifying, as there has been a distinct revival of interest and active co-operation in society work. Special credit is

due to the unflagging zeal of the program committee. A special program was arranged for the regular September meeting, at which we had three distinguished invited guests—Dr. Seale Harris, of Birmingham, Ala.; Dr. J. Buren Sidbury, of Wilmington; and Dr. Aldert S. Root, of Raleigh. A barbecue was a feature of this meeting.

A good deal of effort has been expended by the executive committee in attempting to bring about a strong central public health service to cover all of Guilford County. So far, however, local political factions, largely outside the medical profession, have prevented the municipal governments of High Point and Greensboro from getting together on this important matter, despite the official approval set upon it by the Guilford County Medical Society. For the present, therefore, it seems unavoidable to have three separate health services within the county; one in Greensboro, one in High Point, and one in the county at large. One notable achievement was, however, secured, and that was raising the appropriation for health work in the county at large from $4,200 to $10,000, so that a full-time physician and two nurses, at least, can be obtained to carry on the work in the county.

While the Guilford Society has been actively at work, the attendance of the High Point physicians has not been as large as it should be. In the past the custom has been to hold ten meetings a year in Greensboro and two in High Point. This works a hardship on High Point and discriminates against that city out of proportion to the difference in population between High Point and Greensboro. Last year a very valuable meeting was held in the new County Tuberculosis Sanatorium at Jamestown, and everyone felt that one meeting a year should be held there as a means of keeping the profession of the county in closer touch with this splendid institution. For 1925 the proportion of meetings has been re-allocated so that seven meetings are to be held in Greensboro, four in High Point, and one in the County Sanatorium. This is an equitable arrangement, and it is hoped that it will result in a larger number of High Point men co-operating actively in the work of the society.

SUMMARY

The Eighth District as a whole is doing much good work. Much remains to be done in improving certain special conditions in special localities. Time and the growth of the medical population will remedy many of these conditions. In a few localities the development of a strong leadership will do more to help matters than anything else, and this, again, will take time. The general trend of work in the district is definitely upwards and forwards, and seems to be keeping pace with the marked development of the district in non-medical matters. We are greatly encouraged, but not satisfied, with the work of the district. We do not expect ever to be satisfied, for self-satisfaction is death. We are justified, however, in a militant optimism that believes in the great future of this district, as well as in appreciating the large amount of excellent work that is already being done in it.

Ninth District—Dr. M. R. Adams, Statesville, Councilor.

The Ninth District Medical Society is in good working condition and is growing stronger and more influential every year. Some of the trans-mountain counties are not yet organized and therefore have no medical society, but it is hoped that ere long all the counties will be fully organized. The annual meeting was held in Salisbury on October 29, 1924, and the consensus of opinion was that it was one of the best and largest meetings in the history of the society. The papers and addresses were of a high order, instructive, and up to date in every respect. Among the honor guests was Dr. Albert Anderson, President of the State Medical Society, who made a most excellent address. An elaborate banquet was served by the local physicians. The next meeting will be held in Lexington, and it is expected to be the best meeting ever.

Tenth District—Dr. W. J. Hunnicutt, Asheville, Councilor.

The Tenth District Society is a live, energetic, and enthusiastic organization.

Since my appointment as councilor at your last meeting, three district meetings have been held.

On May 20, 1924, Henderson-Folk County Society were hosts for the semi-annual meeting of the district at the Old Kentucky Home Hotel in Hendersonville. Resolutions of respect were presented on the death of the following members who had passed beyond since our last meeting: Drs. E. B. Glenn, A. W. Calloway, and Charles Beers. We were honored at this meeting by the presence of Dr. L. A. Crowell, of Lincolnton, to whom the privileges of the floor were extended, and he delighted us with some very interesting discussions on some of the papers that were presented. The scientific program consisted of papers upon subjects of surgery, pediatrics, obstetrics, and internal medicine, which brought forth lively discussion. A banquet was served, after which there were a number of interesting speeches and a musical entertainment.

The annual meeting was held at Black Mountain on September 24, 1924, at Robert E. Lee Hall, Blue Ridge Assembly Grounds. The President, Dr. J. F. Abel, in his address, gave some very timely recommendations which would aid materially in advancing educational interests in North Carolina. The scientific program at this meeting measured up to the usual high standards in previous meetings, as evidenced by free and frank discussion of all papers presented. Our guests of honor on this occasion were the President of the State Medical Society, Dr. Albert Anderson, who made an interesting address; also Dr. Charles L. Minor, President of the Southern Medical Association; Dr. James K. Hall, of Westbrook Sanatorium, Richmond, Va., and Dr. L. B. McBrayer, Secretary of the State Society. These gentlemen delighted us with interesting and instructive addresses. An old fashioned barbecue was served, which was very much enjoyed. Officers for the year were elected, Dr. L. G. Beall becoming President.

On April 6, 1925, the semi-annual meeting was held in Asheville at the Battery Park Hotel. There was the usual number of interesting papers. Dr. J. Shelton Horsley, of Richmond, Va., was guest of honor on this occasion, and his address was greatly enjoyed.

Our tenth district meetings always bring a large attendance, many of the doctors being accompanied by their wives. It has been our purpose not to have the meetings too long, but to endeavor to have a varied program, covering all branches of the profession. The interest and attendance, I believe, have been greater during the past year than at any time since our organization.

I am glad to report the organization of one new society, that of Polk County, which was organized in Tryon this spring with seven members. Drs. MacRae, Frazer, and Scruggs, of Asheville, accompanied me and assisted in the organization. Heretofore Polk and Henderson Counties were combined. There are a number of physicians in Polk County, and I think they will have a successful society.

It has been my privilege to attend meetings of the societies of McDowell County, at Marion, accompanied by Drs. MacRae and Scruggs of Asheville; of Haywood County at Canton; Madison County, at Marshall; where we found wide-awake societies. I also attended a meeting in Brevard, at which time the Transylvania Society was reorganized. Drs. MacRae, Frazer and Scruggs accompanied me on this trip.

I had hoped to be able to visit every county society in the Tenth District, but it was not possible to get to all of them.

I am glad to report the Tenth District in good shape in every way.

NEW BUSINESS

The Secretary read the following letter, which was referred to the Committee on Public Policy and Legislation to be elected at this meeting:

AMERICAN MEDICAL ASSOCIATION
BUREAU OF LEGAL MEDICINE AND LEGISLATION
Chicago, Ill., April 21, 1925.

Dr. L. B. McBrayer, Secretary,
North Carolina Medical Society,
Southern Pines, N. C.

Dear Doctor McBrayer:—

Published reports indicate that the President will submit to Congress in December next recommendations for reduction in federal taxes. Every effort should be made, therefore, NOW to induce him to recommend reductions in the tax burdens so long complained of by the medical profession, namely:

1. *The war tax under the Harrison Narcotic Law.*
2. *The tax on traveling expenses necessary for attendance at meetings of medical societies.*
3. *The tax on the expenses of post-graduate study.*

1. *The war tax under the Harrison Narcotic Law.*—A tax under the Harrison Narcotic Law is necessary to enable the United States Government to retain

jurisdiction over intrastate matters arising under it. The one-dollar tax originally imposed was ample for this purpose, the constitutionality of the law having been sustained by the United States Supreme Court while the one-dollar tax was in force. The three-dollar tax was first imposed by the Revenue Act of 1918, as a part of the general scheme to increase taxes to meet the expenses of the war. The other war taxes have been very generally abolished, but the tax on the medical profession under the Harrison Narcotic Act remains. It is an unjust, iniquitous discrimination against the medical profession and should be removed.

2. *The tax on traveling expenses necessary for attendance at meeting of medical societies.* The Revenue Act of 1924, following the Revenue Act of 1921, authorizes the deduction of all ordinary and necessary expenses paid or incurred in carrying on any trade or business, before the computation of federal income taxes. It specifically authorizes the deduction of traveling expenses incurred in the pursuit of a trade or business. The Commissioner of Internal Revenue, however, denies the right of the physician to make any such deduction in so far as relates to traveling expenses incurred in attending meetings of medical societies. The physician who attends a meeting of a medical society for the purpose of increasing his professional knowledge and skill is thus required by the Commissioner of Internal Revenue to pay a tax in order to avail himself of the opportunity to do so. This seems clearly contrary to public policy. It is not in keeping with the Commissioner's other interpretation of the law, which allows business men generally to deduct traveling exepnses incurred in replenishing and enlarging their current business resources. It is nothing more or less than a tax on the knowledge and skill necessary for the prevention of disease and the relief and cure of suffering, injuries and illness.

3. *The tax on the expense of post-graduate study.* The Revenue Act of 1924 authorizes the deduction of all ordinary and necessary expenses paid or incurred in carrying on any business or trade, which covers all ordinary and necessary expenses of the practice of medicine. The Commissioner of Internal Revenue, however, has ruled that expenses of post-graduate study are not ordinary and necessary expenses incident to the practice of medicine, and are therefore not deductible. In effect, he required the physician to pay a tax on the cost of post-graduate study and on the acquisition of knowledge and skill essential to his professional success. The tax seems clearly contrary to public policy. It is not in harmony with the practice allowed by law and recognized by the Commissioner under which manufacturers and merchants are allowed to deduct as expenses of carrying on their business the cost of replenishing and extending their current business resources.

It is urged that the North Carolina Medical Society adopt appropriate resolutions protesting against the taxes named above, and that it instruct its officers to bring the protest and a prayer for relief to the attention of the President and Secretary of the Treasury, in order that the President may recommend to Congress appropriate relief.

Copies of any resolution adopted should be sent to the President and Secretary of the Treasury, and to every senator and representative from your state. Please send a copy of any such resolution to this Bureau. Yours truly,

(Signed) Wm. C. Woodward, *M. D., Executive Secretary,*
Bureau of Legal Medicine and Legislation.

Dr. J. R. Hester, President of the Wake County Medical Society, said that the presidents of county societies had met this morning for the purpose of organizing an association, and had appointed a committee consisting of Drs. J. E. Hobgood, President Davidson County Society; W. J. Meadows, President Guilford County Society; C. R. McAdams, President Gaston County Society, and himself, to appear before the House of Delegates and ask permission to form such an organization. Upon motion of Dr. J. Howell Way, such permission was granted.

The Secretary was instructed to send telegrams of regret and sympathy to Dr. I. W. Faison, of Charlotte, and Dr. Richard H. Lewis, of Raleigh, who had been detained at home by illness.

The Secretary introduced Mr. Cyrus Thompson, Jr., representative of the Aetna Life Insurance Company, who presented a plan of group insurance against damage suits, for members of the Society. This plan provides for a master policy (the group policy), and for individual certificates for the members covered, each certificate to state the amount for which the member is covered. The basic policy provides legal services, all costs, and a maximum to be paid out in settlement of any one claim of $5,000, and a maximum for all claims against one individual in any one year of $15,000, the rate for this service to be $18 a year. The policy will state that the Company is not liable for claims arising from use of the therapeutic x-ray, but for an additional premium that coverage will be given.

After questions and discussion, the President appointed Drs. F. R. Taylor, C. W. Banner, and L. B. McBrayer as a committee to take up this matter with the representatives of the insurance companies and to report at the next meeting of the House of Delegates.

Dr S. D. Craig, of Winston-Salem, offered the following resolution:

Whereas the present capacity of the North Carolina Sanatorium for the Treatment of Tuberculosis is entirely inadequate, there being as many applicants on the waiting list as there are beds in the institution, making it necessary for patients to wait three months after filing application before they can be admitted; and *whereas* the nature of the disease is such as to necessitate early treatment, the long wait at home often causing the patient to lose his chance of being cured; therefore

Be It Resolved, That the Medical Society of the State of North Carolina go on record as urgently requesting the Governor and the General Assembly of North Carolina to appropriate sufficient funds to double the capacity of the institution; and

Be It Further Resolved That copy of these resolutions be sent to the Governor and the presiding officers of the two houses of the General Assembly, and also that copies be given to the press for publication.

Dr. W. H. Smith discussed this resolution, raising the question as to whether it would be wiser to enlarge the present State Sana-

torium or to establish a second institution. The resolution was referred to a committee of three, to be appointed, this committee to make investigations in the matter and to present recommendations to the Governor and to the General Assembly.

NOMINATING COMMITTEE

The following delegates were elected as members of the Nominating Committee:

First District	Dr. H. D. Walker
Second District	Dr. B. F. Royal
Third District	Dr. J. G. Murphy
Fourth District	Dr. J. M. Baker
Fifth District	Dr. B. J. Lawrence
Seventh District	Dr. J. L. Blair
Eighth District	Dr. W. M. Jones
Ninth District	Dr. Thos. E. Anderson
Tenth District	Dr. L. G. Beall

REPORT OF COMMITTEE ON PUBLIC HEALTH ADMINISTRATION

The following report of the Committee on Public Health Administration was read by Dr. J. Howell Way, Chairman, and was adopted.

Your Committee recalls the action of the House of Delegates as reported in the Transactions of 1923, defining the relation of the State Medical Society to the development of what is known as "State Medicine," and also the action of the House of Delegates, as recorded in the Transactions of 1924, in expressing the sense of the State Medical Society with reference to the responsibility and opportunities resting upon local county medical organizations in connection with public health administration. Recalling these formulated postulates as fundamental, and meriting thoughtful consideration from time to time, your Committee at this time has no specific recommendations to lay before the House of Delegates, but would suggest the continuance of the committee, as there will be large matters of public health administration coming up in the near future which should receive the attention and action of this house.

Respectfully submitted,

J. Howell Way, M. D., *President*,
North Carolina State Board of Health.
C. A. Shore, M. D., *President*,
North Carolina State Board Medical Examiners.
C. M. Strong, M. D., *President*,
North Carolina State Hospital Association.

The House of Delegates then adjourned.

WEDNESDAY, APRIL 29, 1925

The House of Delegates met at two-thirty P. M., and was called to order by the President.

REPORT OF COMMITTEE ON PHYSICIANS' LIABILITY INSURANCE

Dr. F. R. Taylor, Chairman of the Committee on Insurance, stated that plans and rates had been submitted by the Aetna Life Insurance Company and the United States Fidelity and Guaranty Company. The Fidelity Company's plan is based on a sliding scale, the premium depending upon the number of members written, costing, for the $5,000 and $15,000 limits, $20 if 100 members are written; $18 if 200 members are written, and so on, down to $15 if 500 members are written. The Aetna has no sliding scale, but offers the same rate if one or a hundred are written. The Aetna offers group insurance. The Committee was not able to decide which plan was preferable, and therefore recommends that it be continued, with power to act, to investigate the matter and offer the policy to the members of the Society.

The Committee was continued, and empowered to act in accordance with its recommendation.*

REPORT OF DELEGATES TO AMERICAN MEDICAL ASSOCIATION

The following report was read by Dr. M. L. Stevens, and was adopted.

Your delegates attended every session of the House of Delegates of the A. M. A. at the 1924 meeting, and were pleased to take part in the proceedings of this, the highest legislative body in our profession. While many questions were discussed and much important business was transacted, in this report mention is made only of that part of the work which we believe will be of special interest to our State Society.

1. Dr. Wm. Allen Pusey, President of the Association, discussed the inadequate number of nurses to meet the nursing demands of city and rural districts and of doctors for the rural districts, and advocated a shorter course of training for both. The House of Delegates failed to take any action upon these recommendations of the President.

2. The House of Delegates went on record as favoring the making of periodic health examinations of all persons from birth until death, and urging state and county medical societies to endorse the making of these examinations as a part of the health program of organized medicine. A blank form of record of examinations of this character was presented by the Council of Health and Public Instruction, and approved, and is now furnished at insignificant cost by the A. M. A. press. Attention was also called to the fact that a number of commercial organizations have entered the field as middlemen or jobbers and are offering to furnish periodic medical examinations to the public generally for a stated sum per annum.

*A later report of this committee will be found at the end of the proceedings of the House of Delegates.

These examinations can be made only by physicians, and contracts are being signed up with physicians in all parts of the country. One jobber buys this service from the physician for $5.00 and sells it to the individual for $20.00 or $25.00. It is the claim of one of these institutions that it has 8,000 examiners. All records of examination are sent to the home office, and it is reported that thirty-nine insurance companies have already contracted for information concerning their policy holders. It is easy to foresee insurance companies securing, in the same way, information concerning non-policy-holders, with a view to soliciting insurance without further medical examination. The accumulated information may be of great pecuniary value to the home office, with corresponding loss to the medical profession. Other weighty reasons for giving serious consideration to the question of health examination as furnished by middlemen are to be found in The Proceedings of the House of Delegates, 1924, under "Supplemental Report of the Judicial Council."

3. The Bureau of Legal Medicine and Legislation is still endeavoring to procure for physicians the right to deduct traveling expenses incident to attendance at meetings of medical associations and expenses of post-graduate study in computation of Federal Income Taxes.

4. The percentage of fellowship in the South Atlantic and Gulf States was shown to be lower than that of the United States as a whole. The total membership of the A. M. A. was 90,056, of whom 54,063, about 60 per cent, were fellows. North Carolina had 1,656 members, of whom only 593, fewer than 33 per cent, were fellows of the A. M. A. Yet there were 973 physicians in North Carolina on the list of subscribers to the A. M. A. Journal (nearly 380 more than hold fellowships). From these figures it is apparent that there is confusion in the minds of some as to the distinction between membership and fellowship, and that many who are paying fellowship dues are only members because they have failed to complete their fellowship applications.

Respectfully submitted,

H. A. Royster, M. D., F. A. C. S.
M. L. Stevens, M. D.
Delegates.

The Secretary read the following telegram from the Southern Medical Association:

"Birmingham, Ala., April 29, 1925.

North Carolina State Medical Association, in Convention Assembled, Carolina Hotel, Pinehurst, N. C.

Greetings. Hope you are having a most successful session.

C. P. Loranz, *Secretary-Manager, Southern Medical Association.*"

Dr. J. Howell Way offered the following resolution of thanks to Mr. James B. Duke, which was adopted by a unanimous rising vote.

Whereas, The Medical Society of the State of North Carolina is deeply conscious of the munificence, beneficence, and power for good contained in the purposes and plans of the Duke Foundation; and

Whereas, It is realized that, as a State organization created to prolong life, prevent disease, ameliorate the handicaps of the sick and promote human welfare in general, the Medical Society of the State of North Carolina and the Duke Foundation are profoundly sympathetic in purpose and ideals; and

Whereas, The Medical Society of the State of North Carolina, is deeply grateful and filled with exceeding pride on account of the fact that the Duke Foundation has come to the state through the ability, generosity, and godliness of motive possessed and put into action by one of the state's own sons;

Now, Therefore, Be It Resolved:

1. That the Medical Society of the State of North Carolina, in regular annual session assembled, does hereby express to Mr. James B. Duke its sincere appreciation and gratitude for his unparalleled service to all classes and conditions of men who now and in the future are to make the citizenship of North Carolina.

2. That the Medical Society of the State of North Carolina pledges its support, unstinted coöperation, and continuous assistance to the Duke Foundation in developing and perfecting the purposes and ideals for which the Duke Foundation was created.

3. That it hereby requests our State Board of Health to make available to the Duke Foundation the use of its offices, staff, and personnel, whenever in the judgment of the directors of that Foundation and the State Board of Health all or part of the machinery of the Board of Health can be of service, either individually or in a coöperative way.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

The following report was read by Dr. J. Howell Way, and was adopted.

The Committee to whom was referred the President's address report they have given the erudite and instructive communication from the distinguished gentleman who served as our official head during the past year their thoughtful consideration.

It is a document replete with evidence of his having given much of his valued time to the affairs of the profession, and it should be carefully reviewed by every physician in North Carolina. It breathes the spirit of a healthy and progressive optimism, and is constructive in ideal and intent. His recorded activity, manifest in his numerous contacts with county and district societies, was most helpful and inspiring to their membership. His judicial and conservative administration of the affairs of his high office has tended not only to maintain the standards of his immediate predecessors in that position, but to further honor and dignify the presidency of this body of professional gentlemen.

We most heartily approve of his successful administration, and cordially coincide in the progressive policies enunciated and suggested by him.

We appreciate fully the enhanced influence upon and benefits to our state profession in having a well qualified medical man, as whole-time state society secretary-treasurer, functioning actively in the many medical affairs of state, districts, and counties. While fully conscious of these advantages, we are also mindful of the fact that so radical a departure from present administrative plans would necessarily involve the readjustment of our existing financial system, with an increase in the annual dues of our members. So vital a change should not be made without further study. We therefore recommend no action at this time, except that the subject of the feasibility of employing a whole-time medical secretary-treasurer be referred to a special committee of three to be appointed by the incoming president, which committee shall report fully thereon to the 1926 session of this body.

Respectfully submitted,

(Signed) J. Howell Way, M. D.,
A. A. Kent, M. D.,
Edward Jenner Wood, M. D.,
Committee.

The following resolution was offered by Dr. J. Howell Way, and was adopted:

Whereas, The House of Delegates of the Medical Society of the State of North Carolina recognize that a certain proportion of regularly licensed physicians of the profession are guilty of practices that discredit them and bring reproach upon the whole profession;

Therefore, Be It Resolved That this body places itself on record as indorsing any action taken by the Board of Medical Examiners looking to rescinding the licenses of those who are guilty of such misconduct, and that we respectfully urge the rescinding of the license of any physician adjudged by a court of competent jurisdiction guilty of a felony or of grossly immoral conduct.

REPORT OF THE COMMITTEE ON NOMINATIONS

The following report was read by Dr. J. G. Murphy, Secretary of the Committee, and was adopted:

OFFICERS

President	Dr. Wm. deB. MacNider	Chapel Hill
First Vice-President	Dr. J. P. Matheson	Charlotte
Second Vice-President	Dr. W. W. Dawson	Grifton
Third Vice-President	Dr. H. H. Bass	Henderson
Secretary-Treasurer	Dr. L. B. McBrayer	Southern Pines*

*Re-elected, although term had not expired.

COUNCILORS

First District	Dr. H. D. Walker	Elizabeth City
Second District	Dr. Grady G. Dixon	Ayden
Third District	Dr. E. J. Wood	Wilmington
Fourth District	Dr. J. C. Grady	Kenly
Fifth District	Dr. J. D. Highsmith	Fayetteville
Sixth District	Dr. V. M. Hicks	Raleigh
Seventh District	Dr. T. C. Bost	Charlotte
Eighth District	Dr. F. R. Taylor	High Point
Ninth District	Dr. M. R. Adams	Statesville
Tenth District	Dr. W. J. Hunnicutt	Asheville

PUBLICATION COMMITTEE**

Dr. J. M. Northington, Charlotte — Dr. R. P. Noble, Raleigh

COMMITTEE ON OBITUARIES

Dr. E. G. Moore, Elm City, *Chairman*

Dr. J. T. J. Battle, Greensboro — Dr. W. M. Coppridge, Durham

COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. W. A. Monroe, Sanford, *Chairman*

Dr. A. A. Kent, Lenoir — Dr. K. P. B. Bonner, Morehead City

COMMITTEE ON FINANCE

Dr. G. T. Sikes, Creedmoor, *Chairman*

Dr. L. P. Williams, Edenton — Dr. D. W. Holt, Greensboro

DELEGATES TO AMERICAN MEDICAL ASSOCIATION

Dr. M. L. Stevens, Asheville, 1924-1925* — Alternate, Dr. J. Q. Myers, Charlotte

Dr. J. M. Parrott, Kinston, 1925-1926 — Alternate, Dr. A. J. Crowell, Charlotte

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

Dr. J. B. Ray, Leaksville — Dr. S. W. Hurdle, Winston-Salem

Dr. W. H. Smith, Goldsboro — Dr. John M. Manning, Durham

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION

Dr. A. A. Barron, Charlotte — Dr. J. G. Pate, Gibson

Dr. Guy E. Dixon, Hendersonville — Dr. W. C. Mudgett, Southern Pines

COMMITTEE ON SCIENTIFIC WORK

Dr. James B. Bullitt (to succeed Dr. Wm. deB. MacNider)

PLACE OF MEETING—WILMINGTON

Dr. Parrott having stated that he is is not eligible to serve as Delegate to the American Medical Association, Dr. W. S. Rankin, of Raleigh, was nominated by Dr. J. Howell Way, and was duly elected.

**The Secretary-Treasurer is chairman *ex-officio*.

*Re-elected, although term had not expired.

REPORT OF BOARD OF COUNCILORS

Dr. A. McN. Blair, Chairman of the retiring Board of Councilors, presented a report, which was discussed. Dr. J. M. Parrott then moved that a committee of five outstanding physicians be appointed to go to Wake County and go into this matter thoroughly and try to settle it. This motion was seconded by Dr. Blair, and was carried, after discussion by Drs. A. J. Crowell, K. C. Moore, W. F. Cole, J. M. Templeton, Cyrus Thompson, W. C. Horton, and L. A. Crowell. (Dr. K. G. Averitt, Second Vice-President, presided during the discussion of this report.)

ELECTION OF MEMBER OF STATE BOARD OF NURSES' EXAMINERS

Dr. Oren Moore, of Charlotte, was nominated by K. P. B. Bonner, and was elected.

The President introduced Dr. J. M. Northington, of Charlotte, Editor of "Southern Medicine and Surgery," who made a proposition to furnish this journal to the members of the Society for $2.00 a year, if it be made the official organ of the Society. Dr. Northington also proposed to furnish the proceedings of the Society in book form, if desired, for $2.00 additional.

Dr. J. T. Burrus moved that a committee of three be appointed to take the matter under advisement, and that we recommend the support of this journal by the profession of the State. The committee to report at the next annual meeting. This motion was carried.

The House of Delegates then adjourned *sine die*.

REPORT OF COMMITTEE ON PHYSICIANS' LIABILITY INSURANCE

We hereby report that we have carefully considered the propositions offered to the members of the Medical Society of the State of North Carolina by certain insurance companies offering special rates to members of the society for physicians' liability insurance, and are unanimously agreed that, in our opinion, the group insurance offered by the Accident and Liability Department of the Aetna Life Insurance Company, of Hartford, Connecticut, furnishes the broadest protection and best service for the cost. Therefore, in accordance with authority granted us and specific instructions given us to act in this matter by the House of Delegates of the Medical Society of the State of North Carolina, at their meeting in Pinehurst, April 29, 1925, we hereby unanimously accept and recommend the group policy offered by the Aetna to members of the Medical Society of the State of North Carolina.

(Signed) Frederick R. Taylor, M. D., *Chairman*,
C. W. Banner, M. D.,
L. M. McBrayer, M. D.

May 21, 1925.

SCIENTIFIC PAPERS

SECTION ON PUBLIC HEALTH AND EDUCATION

SECTION ON PEDIATRICS

SECTION ON SURGERY

SECTION OF MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS' RESERVE CORPS

SECTION ON EYE, EAR, NOSE, AND THROAT

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION ON PRACTICE OF MEDICINE

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS

SECTION ON PUBLIC HEALTH AND EDUCATION

Chairman: L. Jack Smith, M. D., Wilson

CHAIRMAN'S ADDRESS: THE IMPORTANCE OF A MORE CAREFUL DIAGNOSIS AND TREATMENT OF MINOR ILLNESSES

L. Jack Smith, M. D.

Health Officer, Wilson County, Wilson

The Section on Public Health and Education was created by the State Medical Society to lend emphasis to the ever growing importance of this branch of medicine. It has for its purpose the education of the medical profession in all matters pertaining to our relation to each other, but more especially our relations and responsibilities to the citizenship of North Carolina. This program, therefore, has been arranged to conform to the purposes stated above.

We must know what progress has been made in the accomplishment of these purposes; have pointed out to us wherein and why we have failed; and have opened to us new fields for future efforts.

Your Chairman has nothing new to offer in the discussion of the subject chosen, but rather to emphasize the importance of the subject matter.

Human nature is such that we all want to do the big and spectacular things and neglect the little things of life. The old principle, that if we "take care of the pennies, the dollars will take care of themselves," is just as applicable to the practice of medicine as it is to finances. When we overlook and neglect the little things of life, we fail to get out of life all there is in it for us. The best diagnostician is the one who observes closely and weighs carefully every symptom, both objective and subjective. The best therapist is the one who does not overlook any little detail in treatment which will add to the physical and mental comfort of his patient, as well as the cure of his patient.

After twelve years' experience and observation I am persuaded that we have been and are guilty of carelessness and neglect in the matter of a careful and painstaking diagnosis and treatment of so-called minor illnesses. A recent experience impressed this fact on my mind more clearly than ever before. A few months ago an elderly, fairly intelligent woman came into my office, was invited to have a seat, and I inquired what we could do for her. She said she had come to get cured of catarrh, whereupon I informed her that she had come to the wrong place, that we did not treat diseases in this office. She looked surprised and asked if I were not the "doctor" who sent out all those letters and advertised to cure all manner of disease, "examination and consultation free;" that nearly everyone in her neighborhood who had "little things the matter with them" were coming down to see this wonderful "doctor" that very Saturday, and could I direct her to the proper place. Yes, in no

uncertain terms, I directed her to the proper place, with a warning and advice to stay away from this "grafter's" office.

All her neighbors who had "little things the matter with them." These words suggested to my mind the subject of this paper, and what I have already said and what follows is in the sincerest spirit of constructive criticism for the benefit of a suffering public and uplift of the medical profession.

Why did these people go to this quack instead of going to the medical men? I hear some of you answer, in the words of P. T. Barnum, "The American people like to be humbugged." That is a good answer as far as it goes, but why do they like to be humbugged? Ignorance, is my answer. Again I hear you say, "The people do not want to pay me for the time necessary for a complete examination and scientific treatment." My answer is that they will when they are shown the value of such service. I wonder how many of us have been at one end of a dialogue similar to this: (Scene: doctor in office reading morning paper, very much interested in the Teapot Dome oil scandal. Enter John Smith.) "Good morning, Doctor." "Good morning, John—what is your trouble?" (John) "I ain't no 'count, got a misery in my head, can't eat nothin', bad taste in my mouth," etc. (Doctor) "Poke out your tongue. Nothing much the matter with you, John; just take these pills tonight and you will be all right in a few days." I doubt, not the doctor's diagnosis and treatment for the specific condition at the time of the visit, but I do doubt the wisdom of the perfunctory manner in which he *got rid* of this patient. Do you think the doctor did justice to himself, his profession, and his patient? It is very much more difficult to make a correct diagnosis of the real cause of John Smith's trouble in this case than to make a diagnosis of some major illness, for instance lobar pneumonia, and yet most of us spend less time on John Smith's "misery in the head" than we do on pneumonia.

Do we take the time to inquire into the history of these minor troubles and make a thorough physical examination, finding the underlying cause to be incipient tuberculosis, nephritis, diabetes, high blood pressure, syphilis, or some other major illness? Or it may be that we find no evidence of these; but rather the man's faulty habits of living, such as affect his diet, personal hygiene, rest and recreation, may be the direct cause of all his aches, pains, and miseries. Do we take the time? I for one plead guilty.

John Smith is either a liability or an asset in his community; he is either a producer or a parasite on the body politic, including the doctors. He is an economic as well as a social problem to the community in which he lives. The physician to a large extent holds the key to the solution of this problem, both economically and socially. Neglect of this problem increases the burden to the community of which we are a part, as well as the physicians. John Smith gets discouraged and feels that he is without a friend. Along comes the quack with his cure-all propaganda, and John drifts into the hands of this unscrupulous quack, and he leads others along

with him until finally inroads are made into our better-paying class of patients. What I am trying to tell you is that the quack gets his foothold where we let our foot slip.

Not for one moment would I advocate State medicine, nor would I endorse the reputed Chinese custom—pay the doctor while you are well and stop paying him when you get sick. But I do believe the day is here, or at least fast approaching, when the American citizen is going to pay his family physician to keep him well. The wise physician will take cognizance of this fact and prepare to meet the new conditions and profit by them. What kind of preparation should we make? Special training in physical diagnosis whereby we should be better enabled to detect that transition period between health and sickness; in other words, the beginning of disease. A better knowledge of food values and of the relation of food to health and sickness. A better knowledge of psychology, to determine between imaginary, mental, and pathological diseases, and the use of psychology in the treatment of these imaginary and mental diseases.

Many physicians are worried almost to the point of distraction by hypochondriacs, neurasthenics, and hysterical patients, and I suspect having to deal with this class of patients has had much to do with our careless attitude toward minor illnesses. To my mind, the best way to deal with this class of patients is to put them through the most thorough and rigid physical examination possible. They will be impressed by our exhaustive study of the case and will be better prepared to accept our verdict that they are not suffering from any physical disease. We will then be in a position to change our patient's mental processes. He is a victim of morbid fear of disease. His mental condition predisposes to physical weakness. He is mentally sick, and unless he is relieved of this mental condition he will soon be physically sick. It is alarming that so many of our better class people have this unreasonable, morbid fear of germs. It is the solemn duty of the family physician, health officer, and nurse to correct these false ideas. Health literature, lectures, and the public press should emphasize the positive instead of the negative side of health, and it should be done carefully, so as not to create a morbid fear. The Health Commissioner of Chicago has printed on the first page of the Health Bulletin these words, "*Featuring a positive Health Service.*" He has set an example that all health authorities should follow. Fear and love are the two big ruling forces of life, fear representing the negative forces and love the positive forces. An excessive fear submerges a faltering love.

SUMMARY

1. The tendency of human nature is to neglect the little things of life.
2. This neglect on the part of the physician is an economic loss to the community and especially to the physicians.
3. The quack gets his foothold where we let our foot slip.
4. The remedy rests with the medical profession.

THE INCREASE OF MENTAL DISEASES, THE CAUSE AND PREVENTION

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The relation between mind and body has always been an intensely interesting and baffling problem to all thinking men, but the mystery of this relationship is all the more baffling where the diseased mind is concerned. Ever since the time when Nebuchadnezzar's reason was dethroned, "and he was driven from men, and did eat grass as oxen, and his body was wet with the dew of heaven, till his hairs were grown like eagles' feathers and his nails like birds' claws," the subject of mental trouble has been surrounded by mysticism, and these unfortunates have been considered by many as the victims of some awful visitation and not as human beings who are ill and who should be treated as other ill persons, with the possibility of an amelioration of the symptoms or even, at times, of a cure of the disease. When the world learns more of the maladies of the brain, it will come to regard them precisely as it does other diseases; to consider their manifestations and effects natural; and to treat them candidly. Much misery will be taken from the world when mental ill health is rid of the old, superstitious survival of demonology.

The greatest progress in medicine has been in preventive hygiene for those diseases which kill, but we are just entering into the development of mental hygiene, which holds some hope for the prevention of mental diseases, which do not often kill in themselves, but which maim and mar and, at times, make life burdensome, if not unendurable, for those afflicted by them. It is true that there is no more horrible disease than a mental trouble, or more far-reaching in its consequence, but to the lay mind, and to those who have not studied this subject and who have not practically lived with the mentally affected, mental troubles, their nature and extent, have been invested with many terrors that do not really exist, and there are many fallacies concerning insanity which are now beginning to be corrected.

There is no doubt in my mind that there is some increase in insanity. In fact, the higher the scale of civilization the more insane are noted. This has been especially demonstrated by the negroes—the more nearly they approach the standards of the whites the more insanity is found among them. The following statistics will give you some idea of the bigness of the problem:

There are 250,000 patients in hospitals for mental diseases in this country.

Each year 50,000 persons are admitted to these hospitals for the first time.

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*Honorary member.

There are many cases of serious mental maladjustments that never reach these hospitals.

Patients with one type of mental disease alone (dementia praecox) are twice as numerous as persons in all hospitals for tuberculosis.

One man out of every six received into a state hospital for mental diseases for the first time is admitted on account of syphilis.

Over one-eighth of the total expenditures of some states is for the insane—one-sixth in other states.

The expenditures for the insane in some states exceed the amount for any other purpose except education.

The cost of maintenance of persons in hospitals for mental diseases throughout this country is about $75,000,000 annually.

The economic loss to the United States each year on account of mental diseases is over $200,000,000.

The number of hospital beds occupied by patients with mental diseases exceeds the number in use in all general hospitals in this country.

Whereas most hospitals for mental diseases are overcrowded, the average daily number of patients in general hospitals is about one-half of the number of available beds.

Colonel Hodges, Director of the Virginia State Chamber of Commerce, recently made the statement that the Commonwealth of Virginia is spending nearly $3,000,000 annually in the care of the insane, defectives, delinquents, and dependents. In fact, he goes so far as to say that nearly 10 per cent of the total population of Virginia is receiving public charity, while more than 25,000 are actually institutional cases.

Concerning the increase of insanity, however, there are certain factors which must be taken into consideration in getting the real facts of the matter which do not make conditions as alarming as they seem. From the statistics given you will readily see that our big problem is not the prevention and cure of tuberculosis, cancer and pellagra, but the prevention and cure of insanity.

First, we must consider that patients do not die of insanity itself except by suicide, a comparatively small number succumbing to exhaustion and delirious conditions, so there is a steady increase of chronic cases and a far greater number being admitted than are discharged.

Second, a greater number of patients who were formerly kept at home are now taken to hospitals.

Third, there are many more conditions classed as insanity than formerly. This is especially true of senility, which was once looked upon as a consequence of old age.

Dana has showed that more people become insane between the ages of thirty and forty than during any other period, and he calls attention to the fact that more people are now living at that age than ever before. Consequently a greater percentage of insanity must be expected.

Fourth, the prevention of infectious diseases, which are being brought under control through laboratory investigations, will materially reduce mental troubles due to these causes. An illustration of this is the fact that spinal meningitis has been reduced from 79 to 29 per cent under the investigations of Dr. Flexner, of the Rockefeller Institute. This disease has brought about many cases of mental troubles, many of which can now be prevented.

Better methods of taking statistics have also given a more complete record of the mentally afflicted with each census.

Many of the so-called causes of insanity are really but symptoms of the disease, and it is rare that one factor is the sole cause of the trouble. A number of causes are usually responsible for the collapse.

Dr. Carlos McDonald has well said that substantially every individual at some time in his life is exposed, in many cases repeatedly, to many of the so-called exciting causes of insanity, both mental and physical, yet despite this fact we find that sanity is the rule and insanity the exception. In other words, according to White, the normal mind under the influence of stress does not become deranged unless from the operation of traumatism, toxemia, or an extreme degree of exhaustion, and then not even with anything like the facility of the mind predisposed to disease by bad heredity.

Although alcohol and syphilis are responsible for at least 20 per cent of the insanity in males, even here there is a chance for error, for, in many cases of early paresis, manic depressive insanity, and dementia praecox, alcoholism is simply a manifestation of the disease and not the cause of the trouble. It is also true that only a small part of the syphilitics develop paresis. These facts would lead one to believe that other factors in the individual make-up would reduce cerebral resistance and thus make it the *locus minoris resistentiae* on which the mind produces its effect.

It is stated by Dr. Allen G. Starr that at least 35 per cent of mental disorders are due to preventable causes. Others state that this percentage should be 50. Now, concerning the prevention of alcoholism, little can be said which is not being daily discussed by the press, *pro and con.* Chief of the essential causes of mental disorder, according to Rosanall, are alcohol, syphilis, heredity, and head injuries. In addition to these, of course, are drugs, the toxins of various diseases, digestive disturbances, various bodily disorders, exhaustion, nervous diseases, shocks, worries, etc. Especially should be mentioned just here maladjustments; that is, an individual fails to get into harmonious adjustment with his environment. Dementia praecox is an excellent example of such maladjustment. As before stated, patients with dementia praecox are twice as numerous as patients with tuberculosis.

It is interesting to note just here that, since the Gottenburg law was enacted in Sweden in 1855, insanity due to alcohol has been reduced from 25 to 30 per cent at that time to from 5.2 to 7.19 per cent in 1899. Again, it has been shown that where prohibition laws have been enacted crime and pauperism have been reduced.

Concerning syphilis, the future looms big with hope as to prophylactic measures for the prevention of the disease and for its cure by early and proper treatment, in this way preventing paresis.

Thanks to the great advances in preventive medicine in recent years, by which man has saved man from untold pain and sorrow, the child is beginning to come into his own, and much is being done in a scientific way for his development. It is being recognized universally that first the child must be a good physical machine. Therefore, children are now being examined for defective sight, defective hearing, for adenoids, and for any defect they may have which will, in any way, hinder their progress in school or prevent them from becoming strong and useful citizens. It is proper that physical development should receive attention first, but at the same time it must be borne in mind that mental hygiene is just as important as physical hygiene. For of what avail is the man who is perfect physically, but mentally a dement? He is not only of no value to himself, but he is a parasite on his community.

Too little attention has been given to the development of the play instinct in children. "To acquire alert minds, children must be alert; and the young child can only be alert as his play instinct is aroused. Shut out the play instinct and you stunt his growth; neglect to draw it out, and you lessen his possibilities for strength."

Greece, which has produced the highest type of man the world has yet seen, recognized the great value of play, games, and sports. That youth was most honored among them who excelled in athletics, for, to them, the best body signified the best mind. Dr. Stanley Hall says: "Knowledge for its own sake is a dangerous superstition, for what frees the mind is disastrous if it does not give *self control*. Better ignorance than knewledge that does not develop a motor side. Body culture is ultimately only for the sake of the mind and soul, for the body is only its other ego." The play instinct should be cultivated, because play not only develops the child physically and mentally, but is a developer of character. Games which require decision and action should be played. Let the child rub up against his fellows and find out his good points as well as his defects, for in this way only can the corners be rubbed off and the nonsense knocked out of those who have been pampered and petted and made to believe by indulgent parents that they alone are the lords of creation. If more cities would follow the example of Chicago, which has spent ten million dollars on playgrounds, the advantage derived therefrom would be incalculable. It has been well said of Chicago playgrounds that "They are the greatest civic achievement the world has yet seen."

Physical hygiene, however, must be co-equal with mental hygiene if we wish to obtain the best results. Our system of education for many years has been based upon the idea that all children have equal mental attainments, and there seems to be a mania for "standardization." The so-called standard boy or girl passes through the educational mill apparently unharmed, but those who are precocious

or backward or in any way defective suffer. It is of these unusual children that I wish especially to speak.

The idiots and imbeciles should be segregated as early as possible, not only because association with them is deterimental to normal children, but because they are dangerous, especially at the time of puberty. At this time, "Idiots animalize; imbeciles become violent, egotistic, coarse, and vulgar; and the weak minds grow unsettled in their normal feelings and are without resistance to sensations that now erupt within them." The males often become the violators of women and children;, the females frequently become prostitutes, disseminating the vilest venereal diseases, not only crippling the youth of our land and impairing their usefulness, but maiming for life innocent women and unborn children.

Another class of cases is that of the laggards—the repeaters of our schools—backward or retarded boys and girls. According to Ayres, of the Russell Sage Foundation for the Study of Backward Children, one-fourth of the school children are either not in the proper grade for their age or else they have made less progress than they should have made for the time they have attended school. He states that in fifty-five cities of the United States the cost of repeaters is 14 per cent of the total cost of the whole school system. It is this class to whom much attention is being directed today, and, thanks to preventive medicine and to scientific pedagogy, the future looms big with hope for these ugly ducklings, who, although they may take longer than the average child to develop, in many cases find themselves at last, and not only overtake their fellows, but frequently far out-distance them in the race of life. Hutchinson has aptly said: "Do not on any account neglect the average 'common or garden child'. He is well worth all the time and care you spend on him; but put all your ablest intellects, your divinest patience, at work on the exceptional—yes, even on the abnormal—child; for among these brambles and tares you will reap some of the finest and most perfect of the wheat." Goldsmith's teacher said that he was the dullest boy she had ever taught; Byron stood at the foot of his class; Darwin was considered "a very ordinary boy and below the common standard in intellect," and Webster, in early youth, was considered a dullard.

Retardation may be due to defective sight, defective hearing, adenoids, and acute infectious diseases, or it may be due to too rapid growth at the beginning of puberty, and, at times, even to starvation. Some children naturally develop slowly and have to repeat a grade two or more times, yet they are not defective, and, if properly cared for and if properly taught, can eventually take their place with their fellows. It is of the utmost importance not to allow these overgrown boys and girls to become discouraged because they cannot keep pace with their fellows. An effort should be made to find something which they can do well, no matter how simple it is, for once they get the habit of succeeding—of knowing they can do a thing well—they frequently begin to advance, and finally are able to take their place with children of their own age.

Often such children, however, become the butt of ridicule and give up school in disgust. They are undeveloped mentally, and become the vagabonds, the tramps, and the derelicts of our towns and cities.

In speaking of retardation, Professor Lightner Witmer says that: "Any child, the functions of whose brain are not developed up to the normal limit for his age, is suffering from retardation, and a youth who arrives at the age of maturity with his brain below the level of functional development which it might have attained if other methods had been employed, will carry through life a permanent arrest of mental and moral development." There is no doubt that many children stand at the parting of the ways, and if a helping hand is extended they may become useful men and women. If it is withheld, and they are neglected, they become derelicts or even dements. Surely, common humanity demands that these children should have the best attention medicine and pedagogy can give them. Before they are condemned as hopeless (and some are hopeless), physical examinations should be made and every possible defect which could contribute to backwardness should be ascertained; then mental tests should be given to decide whether there is a simple retardation which proper training can overcome, or whether there is a permanent mental defect.

Still another class consists of those children who are not defective, but who are rather "queer or peculiar," and who so frequently develop dementia praecox and constitute the majority of the cases in insane hospitals today. In the observation of several hundreds or thousands of cases of dementia praecox during the past nineteen years at the State Hospital, Morganton, North Carolina, and at Richmond, Virginia, I have been greatly impressed by the fact that, as children, many of them were not defective, but were peculiar—different from other children—and did not have healthy mental habits—habits which could have formed a sound balancing influence in their conflicts. Many were exceedingly bright and were the wonder children of the school, but were like "straw fires," which burn brilliantly for a minute and all is over. Others were dull and were unable to keep up with their classes. Many were seclusive, daydreamers, reticent, shy and sensitive to a fault, and overly conscientious—that is, "prematurely and one-sidedly conscientious." Instead of playing the rough-and-tumble games so dear to most children they spent their time reading or in the company of their elders. They had no chums, and missed the healthy intercourse with those of their own age which would have been a wholesome correction for their abnormal habits of thinking and living. Excessive religious interest was manifested by many, and they worried over abstract problems which neither they or anyone else could solve. Finally they came to live in a world of dreams and good resolutions. They lost sight of the real, and "developed an insidious tendency to substitute for an efficient way of meeting difficulties a superficial moralizing and self-deception." A life of action at last became impossible, so fixed had become their

abnormal habits, and under some strain, which would have meant nothing to a normal individual, a mental breakdown occurred.

The physician and the teacher have a grave responsibility in their relation to the child. If the physician can recognize early symptoms of a mental collapse as he does the early symptoms of a physical breakdown, and if he can instruct the parent and the teacher how to manage children who are on the verge of a mental breakdown, many children can be saved from the blighting curse of insanity, and many a home can be spared this most awful of sorrows. Not only the children of neurotic parents and those who have had a bad mental heredity, but any child who shows a disinclination to take part in the healthy sports of childhood, or shows a falling off in his school work, should be examined, and, if possible, the cause of his lack of interest and the cause of his falling off in his work should be ascertained. The fact should be recognized, too, that, at times, retardation may be no more of an evil than precociousness, and that while retardation may only lead to a slowness of progress, precociousness, at times, may develop into insanity or extreme dullness. Defective sight and defective hearing, bad breathing due to adenoids, or any other physical defect should be remedied The school life of many a child has been burdensome and his adequate preparation for life's work has been seriously impaired by physical defects which could have been remedied so easily had proper care been taken at the right time.

If a child is seclusive, shy and senstive, if he is easily tired, irritable, nervous, has persistent headaches, and takes no interest in the ordinary pursuits of childhood or shows a falling off in his school work, it is often best to take him out of school, for these are the premonitory symptoms which frequently lead to a precocious dementia. A short mental rest may restore him. It is best, if possible, to interest him in manual work. Let him work with his hands and put aside books. Farm work is ideal in such cases, under proper supervision. At times, the agricultural and mechanical courses which are now being given in many colleges are well worth while in such cases. If the mental rest does not restore the child completely it is a great mistake to push him through school or college. His family should be satisfied for him to become a wage earner with his hands. Many are not fitted for higher education, and there is always a place for skilled manual labor. It is an immensely poor investment to gain a diploma at the cost of a wrecked mental or physical organization. From my observation of dementia praecox, I believe that many have been ruined by pushing through school and college who could possibly have been saved had the early symptoms of a mental breakdown been recognized and had these warnings been heeded.

Puberty is the crucial time in the life of the child, and this is often the time when many defects develop. At this time the child becomes a new being, and every fibre of this new being pulsates with life and vigor. He does not understand his new sensations, and hardly knows how to adapt himself to the new world which

has now opened up to him. Parental restraints are set aside. Self-consciousness and self-criticism are marked. The youth is moody, introspective, and broods. "Anxiety as to right exhausts the energy that should go into action. Trifles are augmented to mountains, or debate with one's self as to what is right is carried so far as to paralyze action." Such an instability, occurring, as it does, coincidentally with the arduous requirements of school life, is too much for many children, and frequently the combined demands on the physical and mental strength at this time cause a mental breakdown. The normal child is able to weather the storm unaided; the mentally unstable, unless a helping hand is extended, succumb, and either spend their days in an insane hospital or are able to take only a small part in life's work. The opportunity of the physician is especially great at this period. The sexual question should be robbed of its mystery, thus preventing the vague fears and surmisings which have pestered the soul of many a boy and girl, and, at times, have been their undoing.

In conclusion, then, children should first of all be made as nearly bodily perfect as possible, but the guiding and controlling of that body should not be neglected if we are to have "fine human beings." In every way possible self-reliance and self-control should be taught, and, above all, children should be taught to do things rather than to think of doing them. It is never wise to get into the habit of avoiding difficulties, but it is always best to meet everything that comes up in life with decisive action. The habit of decisive action can nowhere be better obtained than on the playground, where the boy has to think and act quickly. For this reason, if no other, the play instinct should be cultivated. Wise municipalities are beginning to recognize as never before the value of playgrounds, and this is a very hopeful sign for the youth of the future.

The child has been neglected in this age of commercialism, when every thought is bent towards the accumulation of money. Herbert Spencer has well expressed the condition when he says: "The raising of a first-rate bullock is an occupation to which men of education willingly devote much time, inquiry, and thought—the bringing up of fine human beings is an occupation tacitly voted unworthy of their attention." This is a short-sighted policy, for "If regeneration is ever to lift us to a higher plane, the adolescent nisus will be its mainspring."

DISCUSSION

Dr. L. Jack Smith, Chairman: It has been said by some wag that in thirty years we would all be in the insane asylums, if the present rate of increase is maintained for the next thirty years. I doubt the wisdom of that statement, but, in view of the fact that my personal observation led me to believe that insanity and feeble-mindedness are increasing, I asked Dr. Anderson to present this paper to us today.

I fear that the medical profession even, and most certainly the laymen, do not realize the importance of this subject, and I think it is due to the fact that we do not see these people who are in the asylums. They are segregated, and they get out of our minds. For that reason we do not realize the magnitude of the problem that is before us.

I shall ask Dr. McNairy to lead the discussion.

Dr. C. Banks McNairy, Superintendent Caswell Training School, Kinston: I want to thank Dr. Anderson from the very depths of my heart for this timely, scientific discussion of what, to my mind, is one of the most momentous problems of the age.

Some years ago it was my privilege to attend the meeting of the Southern Medical Association in Washington, and one of the distinguished physicians there made this startling statement. He said: "Gentlemen of the medical profession, the real cause back of 75 per cent of all the conditions you are called upon to treat is mental sickness or mental disorders."

I am almost in a position to believe that. In North Carolina today I am thoroughly convinced that there are from eight to ten thousand people belonging to the sub-normal, abnormal or feeble-minded class; as Goddard said, people who can't manage their own business with ordinary prudence.

Some one has said that a normal person is one who will function in the environment in which he is forced to live, to the end that he will feed his mouth and clothe his back, preventing himself from becoming a monkey-wrench in the wheels of progress. Another has said that a normal person is one who will do the right thing at the right time in the right place always. Now how many of us are normal? (Laughter.)

I was struck by one statement that Dr. Anderson made with reference to the repeaters in our schools. I believe that there is enough money wasted in North Carolina in our high schools and graded schools on "repeaters" to properly take care of every backward and mentally defective child in the state.

I made some investigation some time ago in some of the cities as to how much it was costing the graded schools to carry on their repeaters. It is simply enormous. I have quite a quarrel with our educators. I don't believe much in this kindergarten hot air and fairy tales with which we start our children.

The other day a grandmother came to me and said: "Billy wants you to send him that goat; you promised him a goat." I said, "Yes, and I told him I would send it whenever his grandmother would permit me to do so." She said, "I wrote Billy and told him that a goat can't stand the cold weather in the mountains." He lived at Roanoke, Va. I said: "Grandma, why on earth did you tell that boy such a lie? He knows that the natural habitat of a goat is the mountains, in winter time. He will always discount every statement you make."

I don't believe in starting our children in their infancy, Dr. Anderson, in telling them those fairy tales and lying to them about sex and where they come from. When they get about six or seven years old they realize that we are nothing in the world but liars, and they won't believe anything; and then in after life, when the responsibilities of life begin to rest upon them, their machine is one that is defective, emotionally unstable, and they will hang on to some of those infantile fantasies just as forcibly and strongly as Leopold and Loeb did.

We have those in North Carolina, and we have them in our institutions. We meet them in our clinic. I do wish you doctors would give them more consideration. They can't help it that their parents handed down to them a tin Lizzie when they might have had a Packard. The tin Lizzie stops and backfires most of the time.

I don't know where we are going, doctors. I don't know what is the matter with us. I do know and realize some of the difficulties we have in making a diagnosis. I realize it more so, Dr. Anderson, when trying to make a mental diagnosis. You start to get the history of a case and begin to question the man right closely in order that you may find out the real cause of his trouble, and he will lie like a sailor all day long.

That is just the way when we come to talk about mental diseases. Oh, the unfortunate, precocious children who have a marvelous memory, which Dr. Barr says is a symptom of imbecility! So, for God's sake, fathers and mothers, if you have a supermental child, don't tell him nor anybody else, but take him by the nap of the neck and shake him and bring him back to reality. (Laughter.)

At the same time, Doctor, I was so delighted to hear you speak about that backward boy who has a super-sensitiveness about his inferiority, that boy who suffers the pangs of the damned because the teacher says he can't recite like Mary Jones or John Smith. Poor fellow, he is just nervous, all excited, and everybody makes him believe he is a natural fool. He is never heard of in the class, but when 50, 60 or 70 comes along he is walking as straight as an arrow; he is a patriarch; he is the backbone of the finance and the religion and the progress of his community, and his companion of youth, with a super I. Q. (intelligence quotient) of 110 or 120, has long since burned out, died in the penitentiary, or hanged himself, and is forgotten.

That is history that is being repeated every day in our state. Be very careful what you say to the backward boy. Give him a smile; give him a chance. He doesn't want your money; he wants encouragement. Help him. I do thank Dr. Anderson from the very depths of my heart for this timely paper, and I hope you will take it home and think about it.

You meet them every day, people who are dying. That is what moved our grand president to make that splendid address this morning. They are people that you and I have neglected, as the doctor said, when we used to try to teach in the public schools and thought intellect was everything.

Here is my conception of intellect, and then I am through. Pardon me for taking so much time. You can put anything into this old cauldron, anything in the world—art, philosophy, science, geology, theology—and just roll it up and pick it up and pour it in there, but it is just as worthless as the pumice in the old copper still until you set it over the fires of mentality, brains, or wisdom. It is not worth a damn to you until you can show it in functioning. (Applause.)

Dr. A. E. Bell, Mooresville: I don't think a paper of this importance should be passed by without a very free discussion. The subject of mental diseases in North Carolina and in other states is one which should command the attention of every one, because it is a subject that stumps every one. If we should go over, as Dr. Anderson probably could tell us, the records of the state hospitals for the insane, there probably would not be many families in the state of North Carolina but who touch that institution at some point.

Dr. Anderson, our President, in his address this morning emphasized the much neglected question of mental hygiene. It behooves the general practitioner to study this question more carefully than he has done in the past. As your chairman stated, in the diagnosis of little things the general practitioner has been harassed by those patients whose illnesses are not easy to be ferreted out, and when they are found by a careful examination, they are due to some mental burden, hysteria, the neurasthenic whose only disability is the exhaustion of nerve force. They have harassed the general practitioner to the point where he does not care to have anything to do with that class of patient, and he becomes impatient in dealing with them.

We should go deeper, though, into the study of this question than the mere treatment of psychoneurosis. I have made a few notes here, and I want to emphasize some of the things which Dr. Anderson brought out in his paper. One is that we should make every effort possible to do away with that archaic idea, which has descended to us from the middle ages, that a mental disease, a person suffering from a mental disease, is a disgrace to any community. We shall have to learn that mental diseases are as prone to the human race as physical diseases, and it is no more of a disgrace for a man to show a quirk, a disease in the most delicate portion of his body, which is the brain and the nervous system, than it is for him to show disease in tissues of other kinds. There is where the general practitioner can do a great educational work to bring a new idea to his community. Because a person shows mental aberration he should not immediately be banned from society. He is a sick man. He needs the utmost sympathy at that time and the most tactful handling possible.

Some of the diseases are amenable to treatment. It has been said that 47 per cent of all the deaths in the New York hospitals for the insane are due to the cerebro-syphilitic type of disease. The general practitioner has here one of the most lucrative fields, not

lucrative in the way of financial success but lucrative in the way of medicine, to study the early symptoms of cerebral syphilis.

Sometimes as early as twenty years before paresis ever appears certain early symptoms can be detected. One of the earliest is lack of what we call bone sense. We test this by means of tuning forks. We find that the posterior roots have become involved and the nerves leading from these roots have lost their sensibility. They are no longer able to detect the vibration of a tuning fork.

In that connection, also, one of the earliest symptoms of tabes is the pains occurring in the lower limbs, because of the irritation of these same nerve roots. These symptoms are early. We find, in addition to that, certain mental symptoms of cerebral syphilis, of which the most common are headache and certain neurasthenic symptoms which are indefinable and almost impossible to put into words.

All of these demand the most thorough examination, both physically and by means of the laboratory. We shall find those persons showing a plus one or plus two, and frequently, if the blood is not positive, we shall find by examination of the spinal fluid that the cells have increased from a normal amount to 50, 60, sometimes as much as 100 cells. That shows an involvement of the cerebrospinal canal, and should call for active treatment at that time.

It has been suggested that in the prevention of mental diseases the State Board of Health could well employ several psychiatrists and scatter them throughout the state, to be called by the general practitioner to his aid in the diagnosis of early mental diseases.

It has also been suggested that each general hospital have in connection with it a ward where these patients can be received and studied scientifically. Probably a better plan would be for the state to establish psychopathic hospitals throughout the state, at least two in North Carolina, where these patients could be referred.

It would be necessary for the state to have, then, a law which would allow those patients to commit themselves voluntarily, or they could be committed for observation for a certain length of time upon the request of any physician, any judge of the court, or any police officer. This in itself would help to remove that stigma which has adhered to mental diseases.

However, are we getting deep enough when we take the treatment of mental diseases alone? It has been said that in order to have a sound mind in a sound body we should select our grandparents, and that is probably the most truthful statement which has ever been uttered. While there are other causes for mental diseases, to my mind heredity plays the greatest part.

Would it not be wise, in view of the great economic loss which the state is today sustaining, to stop this loss at the source, and not allow a tree to still continue to grow and lop off a branch here and a branch there, knowing that the tree will put out other branches and cause the same economic loss?

Recently the state of New Jersey, through its legislature, has shown courage enough to pass a law, giving into the hands of a

commission, after careful investigation of all the facts, and a thorough examination of those subnormal people who come into the toils of the law or who have committed some overt act showing mental disease, the right to sterilize those people. It seems to me that it is a long step in advance. Why should we allow those subnormal persons to continue to propagate and increase the size of every flowing stream, when we have an opportunity to dam the stream at the source? (Applause.)

Dr. J. M. Templeton, Cary: I just want to say that my friend's paper (Dr. Anderson's) is magnificent from his standpoint, and I am not going to discuss the mental features of it, Mr. Chairman, because that is not my specialty; but I do want to say that what he says with regard to mental diseases is equally true with regard to physical diseases.

We doctors have not been educated properly. From our textbooks we get the symptoms of cancer, for instance, after it has developed. What we need to do is to go back, as these gentlemen suggest, in physical matters and trace disease to its origin.

Some one has suggested that the time will come when you can examine a man's blood, as Doctor Bell says, and detect cancer in his make-up. When we get back to that point, when we go back in physical diseases, as they suggest in mental diseases, we shall do better work. But I was not properly educated that way. Possibly these young fellows are.

One more word. I want to say that I don't agree with the gentleman that we are going to the devil mentally. I think there were just as many "nuts" 40 years ago as there are today. (Laughter and applause.) The only difference is that Anderson and a few more of them have gone back a little deeper and they know who the "nuts" are. (Laughter and applause.)

Dr. Anderson, closing the discussion: I appreciate the discussion that this paper has brought forth. If I can only put over to physicians the bigness of the problem of mental diseases, I shall consider my effort in writing this paper absolutely well worth while.

Dr. Templeton is absolutely right; none of us are properly educated. We should have been taught the importance of knowing something of mental disorders as well as of physical disorders. In Richmond we have the McGuire-Newton Child Clinic, and in this clinic there is a psychiatrist who is doing an immense deal of good. We have, too, a committee of psychiatrists appointed by the Governor to examine all prisoners in the penitentiary who are condemned to be hanged, and to ascertain whether they are sane or insane.

I am anxious to see in the South many psychiatrists, for children should be examined as to their mental fitness as well as their physical fitness. With the bigness of the problem, as I have shown it to you today, you will see the necessity for just this kind of procedure. It would be impossible, of course, that every town should have its psychiatrist, but it would be possible to have a

district psychiatrist. Many physicians in the South are never taught anything concerning mental and nervous diseases. I graduated in 1904, and I had no lectures on mental diseases. In the Medical College of Virginia, we are not only lecturing but we are giving clinics, and the men we are sending out are going to be better physicians on account of what is being given them. If the general practitioner can recognize the early symptoms of a mental disorder just as he does the early symptoms of tuberculosis, an immense deal of good can be done.

I am especially anxious that the physicians of the South shall recognize the predementia symptoms of dementia praecox. It is important, too, that the physicians of the South shall realize that depressions are dangerous things, and that people who talk of committing suicide will do this. It is one of the greatest fallacies in the world to say that the man who is talking about committing suicide will not do it. Another thing, too, it is important for the physician to realize that a man may be mentally sick without having delusions and hallucinations, that is, you can be so retarded mentally and physically that you cannot function. A man in this condition is just as mentally sick as though he were a maniac.

I appreciate greatly what Drs. Bell and McNairy have had to say relative to my paper. I thank you. (Applause.)

THE VALUE OF OBSERVATION AND EXPERIENCE AS APPLIED TO THE ART OF LIVING

CYRUS THOMPSON, M. D., JACKSONVILLE

Mr. Chairman, I think this is exceedingly unkind, after what I have told you. I am not a man given to complaining, and I don't know whether any of you ever had the flu or not. If you had, you will sympathize with me. The Chairman wrote me some time ago and asked me to go on the program. I said: "I am too old to write papers, but I will enter into a discussion at some point, if it is convenient for me to do so." I expected nothing more than to enter into a discussion, Doctor, as my ancient friend, Demosthenes, said, "on the spur of the moment."

After a while, along about the first of April, April fool's day, you know, the Chairman wrote to me and said: "I must get my program ready at once and I am assigning you a subject, to wit, 'The value of observation and experience as applied to the art of living'."

As to the value of it, Mr. Chairman, it is worth everything, and there isn't anything else that is worth anything at all. But I was in no humor to discuss anything. About that time, you know, I had the flu. If you have ever had the flu you know you don't have any energy for anything; you are just a perfect Sadducee; you don't have any spirit for anything at all. You don't want anything to eat. You don't want to do anything. You don't even want a drink of good North Carolina, copper-distilled corn likker. (Laugh-

ter.) So I said to the Chairman: "I haven't anything at all to say, and I am not going to have anything to say. I didn't put myself in this position, and I am just going to drop out of it."

I have gone along for the last five weeks with the flu. I have reminded myself of Jiggs's nigger's brother. Pompey went to Jiggs and said: "Boss, I would like to get off for a few days to go to see my brother."

"What is the matter with him, Pompey?"

"Boss, he is seriously sick. He has been sick some time."

"Why don't you get a doctor for him?"

"They have had several."

"What is the matter with him?"

"They can't find out what is the matter with him. We are afraid he has some serious sickness working on him."

"What are his symptoms?"

"Sah, he don't have no symptoms. We are afraid he is going to die, though. He eats well, he feels well, and he sleeps well, but he can't work; we are afraid he has some serious disease working on him."

Old man Jiggs said, "By golly, Pompey, that is not a disease, that is a gift." (Laughter.)

So I have had the flu. I have not had any fever. I have lain down twelve hours out of twenty-four for the past five weeks. It is not particularly a disease, but it is apparently a gift. (Laughter.)

Now you don't want me to say anything; you just want me to talk. Isn't that right? (Laughter and applause.)

The Chairman assigned me the subject of the art of living, because heretofore in addresses which I have made I have referred to the art of living. In one place I said that the saddest thing in life that I see is this: The finest of all the fine arts is the art of living, but everywhere there is failure of folks to learn this fine art.

Isn't it sad? My apostolic friend, Dr. Paul Anderson, I appeal to you, isn't it immeasurably sad, notwithstanding it carries a modicum of profit to you?

My friend, McNairy, made the very best speech I ever heard McNairy make. The latter part, you know, was peculiarly fine. It reminded me of the old Scotch woman when the minister went to her and said: "Remonstrate with your son; he swears." She said: "Minister, I know it is wrong, but it does set a conversation off so nicely." (Laughter.) He said nothing else was worth a damn. I said: "Right you are, my friend." (Laughter.)

The finest of all the fine arts is the art of living. The saddest of all the things I see is that men and women are so slow to learn the art. Women go to the colleges, and they paint. That is art; not very fine art! You have seen some of their painting, haven't you? (Laughter.) I have. That is art. But the finest of all the fine arts is the art of living, and this they fail to learn.

I was sitting in my hall Sunday morning. I had not a disease, but a gift. I found one or two of my books out of place, and I said:

"I will replace them." When I had replaced them I saw there Hume's History of England. I said: "I wonder what sort of looking thing old man Hume was." I took up the first volume and said, "In all probability his picture is in it." Sure enough, there was a picture of David Hume, Esquire. I said: "That isn't bad. He looks like he might be a very genial gentleman. Let's see what he says." What was the preface? He didn't have any preface, but there was a short account of "my life."

He said: "There isn't anything of vanity in what I shall write, because my failures were more than my successes. The first book I wrote and put on the market fell down absolutely." I read on and on, and after a while I came to where he said: "I wrote a book that some divine didn't like and he wrote a pamphlet against it. I never entered into a controversy with him. Why should I? I was pleased that they were taking notice of what I had done. In a little while my bookseller wrote to me and said, 'There are inquiries for that book of yours that we published at first and nobody wanted.' So I am getting independent," said Hume, "I have accumulated almost 1,000 pounds."

Then after a while, when he got sixty-five years old, David Hume, who knew the art of living, said: "I am seized by an incurable disease. There isn't any pain about it, but I am going to die." He lingered along failing for a year. He said: "Why shouldn't I die? There isn't any reason for my living longer. I intended when I grew up to devote my life to literature, and I have done it. Everything that I had in mind to do when I came up to the threshold of actual living has been done. If the boatman of the Styx were to come to me now, I couldn't say to him, 'Hold on; let me stay a little bit longer; I have a daughter to provide for and a son who is not settled in the world.' I could not say that because I have never married. All I could say to him would be this, 'Let me stay a little bit longer and make some corrections in some of my work.' But then the boatman would say, 'If I let you stay and make the corrections, you will want to stay and see how these corrections are received by the public. You loitering old rogue, get into the boat and let's go across.' "

One of his friends said to him: "You are better." "No, no," he said, "I am dying. If I have any enemies in the world, tell them that I am dying just as certainly as they could wish me to. I know I have friends, and when you go out and see them, tell them that I am dying just as painlessly, as peacefully, as cheerfully as they could ask that I should die."

That is fine. I have always liked that. I did not hear a sermon Sunday morning, but, Dr. McNairy, I heard that, and that was better than preachers preach in these days; because the real art of living is sitting down in the boat and not being, as you might say, (not as I would say) damn fool enough to rock it. (Laughter and applause.)

Your quiet attitude might be due to your faith, or it might be due, Doctor, to fatalism. I have long since made up my mind that

I am not running this boat, and I am not rocking it, and when I get to that place away over yonder, and some fellow comes up to me and says: "Where did you come from?" I will say: "From the world; from down in North Carolina, if you know where it is; a fine place; I shouldn't have minded staying there longer." (Laughter and applause.)

Now I am going to get to the serious part of it. One night I was out with a good friend of mine. He had pneumonia. He was wonderfully scared about himself; he was more scared than I was. I shouldn't have been that scared about myself. He had some pains in his chest. I said: "Oh, well, I will strap you up." His wife got me some adhesive plaster and I began to tear it up into strips. It was half past one o'clock at night. Every strip we would cut off would stick to my fingers. She would pull it off. At last I said to her: "What kind of a chicken does this plaster remind you of?" She said, "What kind of a chicken?" I said, "Yes." She said: "Why, no sort of a chicken at all. What do you mean? Does it remind you of a chicken?" I said: "Assuredly it does." She said: "Well, what kind of a chicken does this adhesive plaster remind you of?" I said, "A pullet, of course," because she had to pull it to get it off. (Laughter.)

She looked at me with tears in her eyes, and she said (she liked me, you know, she almost loved me): "I don't believe you ever had a serious thought in your life." "Bless God, if you go with me to a photographer," I said, "to have my picture taken, after you see the negative there is one passage in the Bible that will rush into your mind like an avalanche. It is that where it says, 'Thou knewest that I was an austere man.'" (Laughter.)

You know, I am not pessimistic. I am not running the boat and I am not rocking it. I have faith in the Boatman. It may be fatalism in me, or it may be my hereditary, my ancestral faith, but I believe that in the end, in the providence of God, it will all come out right. It may be that it will come in the way of evolution or in the way of the fundamentalists. You know, I am rather an evolutionist. A good man may believe in God and also in evolution. I am not much of a fundamentalist, because a fundamentalist puts himself in an awkward position, and I dislike to appear awkward.

Let me make this digression. You just want me to talk a little bit. I know that and I am going to do it. At my father's farm were two negro houses down the road two or three hundred yards from the house. One of the negroes was a fundamentalist; the other was a modernist. In the great earthquake of 1886, one negro, the one who was a modernist, jumped out of his house and ran up and down the road and hollered: "Judgment Day, Judgment Day, Judgment Day!" The other negro was a fundamentalist. He came to the door and said: "Why don't you go back into your house, you damn fool, and lie down? Who in the hell ever heard talk of Judgment Day coming in the night time?" (Laughter and applause.) The fundamentalist ties his craft with a short rope to a post set into the ground. The modernist anchors his house-boat

into the ground by a long cable. Do not the same profound things hold them both?

I hear my friend Anderson stand up here and talk about mental diseases, the treatment and prevention of them. Then I hear my friend over there (Dr. Templeton), saying there were just as many "nuts" forty years ago as there are now. Human nature is pretty much the same wherever we go. I rather think, though, that the nuts are on the increase. Everybody is planting pecans these days.

Now I am an austere man. If you ask me why these mental diseases are on the increase—(I am talking now like an aged general practitioner, a class that in twenty-five years will be perhaps just as extinct for the posterity of the world as the dodo. You have heard tell of the dodo.)—I answer: Hear me—if there is one thing in the world that is especially the matter with the world today it is an overdose of democracy. If there is one thing in the world today the matter with the world it is the dignity, that men preach, of the individual, the uncrowned king in America, in the Soviets of Russia; the contempt for authority everywhere in the land, even in the family when God Almighty raised up the most powerful and durable race that ever lived upon the face of the earth, to-wit, the descendants of Abraham, having established his compact with Abraham because of the character of Abraham that he would control his house, that he would exercise authority over his house, that justice and judgment might come to pass.

But now we have gone away from that and we coddle the child and let the child rule us. There isn't any family government in the land any longer. How in the name of God could it be but that there would be an increase of maladjustment through a decrease of training? How do you want to get back? Oh, well, they do the best they can at Westbrook. My illustrious "keyhole keeper," Dr. Louis Beall, from Black Mountain, said he would do the best he could up there; but if you want to prevent mental sickness, you have got to come right down to the heads of the family and establish authority and training there. Then you have got to carry that authority on throughtout the state of North Carolina and the state of Virginia, and the nation, and you have got to say that the just powers of government are not derived from the consent of the governed, but arise out of the obligation which those who are capable of taking care of themselves owe to themselves and to the lesser for the protection of the lesser, and the uplifting of them who are incapable of caring for themselves.

Jefferson was a red-headed Bolshevist. If he lived now he ought to be deported to Russia. The old man's bones can rattle when I say that, if they want to. (Laughter.) No, no, no; there would not be half the nervous breakdowns in the land if the family functioned as well as it functioned one hundred and fifty years ago, or one hundred years ago. You can talk about your heredity. I know that. However, there is a vast deal in training and environment.

I was driving over here yesterday and I saw a blue flower in the sand hills. I said: "I haven't seen that down in my country in any place except one near Hallsville in Duplin. Why isn't that flower blooming down there in my land?" Because the environment can't produce it. Things are the equation of their environment.

I came along and I saw a flower, a purple flower up this high, and I said to those with me: "What is that?" They said they didn't know. I said: "It does not bloom in Onslow; but we have trumpets blooming there in our hard meadows. They are not here. What makes the difference? Environment."

Oh, you can talk all you please about heredity being the chief factor, and it is, because it is the concretion of long environment You can talk about these other things. Oh, yes. But I know that Solomon said: "Train up a child in the way he should go, and when he is old he will not depart from it." We are not training them. We send them out here to school and build great big school buildings for them and teach them a little of many things in books.

I was educated partly in a log schoolhouse, and in my little town of Jacksonville right now the public school has got better buildings than the college I went to had in 1872. They try to build buildings more than they try to build character today. When you haven't got character you make a nervous breakdown. (Applause.) "With all thy getting get wisdow; wisdom is the principal thing." If you can't adjust yourselves to the world you live in, you are not worth hell-room. The art of living is a matter of happy adjustment.

Now I reckon I had better stop. Last night I said that I probably wouldn't say anything, because I am always afraid to talk. It is like that fellow who asked his girl to marry him. She said, "Yes." He sat there quiet-like for several minutes; then she said to him: "Why don't you say something?" He said: "I am afraid I have said too darned much already." (Laughter and applause.)

OUR HANDICAPPED CHILDREN

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The greatest possible asset of any nation, any state or any community is its citizenship. All other assets can only be utilized by the individual, and the degree to which they are utilized is in direct proportion to the capabilities of the individual.

What would it matter if our state is abounding in natural wealth—what if her virgin-forest covered hills were filled with metals, coal, and precious stones, and her fertile plains covered with lakes of oil—what if the waterfalls of her wonderful rivers could furnish power to turn the universe and her climate the best her Maker could give? All of this would mean nothing—absolutely nothing—to a people steeped in ignorance and superstition, roaming the woods in naked savagery, and inspired to endeavor only by the primal instincts of lust and hunger. Such assets, though the greatest that man could wish, would be as pearls before swine.

It therefore follows, as truly as night follows day, that the nation, the state or the community which excels in progress does so by first building up the standards, the morals, and the education of its people. No community standards nor ideals can possibly surpass its average individual standards and ideals.

In the main, people will have exactly what they want. I do not mean what they often say they want, for very often they say they want certain things and then deliberately set about doing the things which will inevitably bring about the very opposite. I mean that in the main people will have exactly what they try hardest to get. When the people are educated to want certain things they will have those things.

Laws do not make civilization and Volstead did not make prohibition—but education, or a growing sentiment against the abuse of alcohol, is developing a generation of prohibitionists. The Eighteenth Amendment is a result and not the cause of this public sentiment. Years ago the people of North Carolina wanted better roads, and set about in the then most available way to get them, by using state prisoners to work on the roads. Gradually, in the evolution of the state, still better roads were wanted and needed to meet the growing demand. As a result of this insistent public demand, the representatives of the people in General Assembly were compelled to provide the necessary machinery for building adequate roads, and the enormous bond issues were the result of public sentiment and not the cause of it.

One great trouble is that so often we put the cart before the horse and do not start real progress where progress really starts. The coming citizenship will naturally and most certainly accomplish the ideals they are being taught today.

Practically speaking, then, *the education and development of the children is really the only thing which needs vitally concern any government.*

If then, education—moral and intellectual—is the fundamental basis upon which all progress is built, this education should be universal and thorough. Every child must be taken into consideration, and, in so far as possible, the handicaps of the sub-privileged child must be removed. For the sake of society as well as the individual, the handicapped child must not be forgotten nor allowed to drag along behind, to ultimately become a charge on society and a burden to himself and his people.

Those children whose moral environment is bad should be given an insight into and an inspiration to attain the higher and better things of life. Those children who have physical defects which handicap endeavor should, in so far as possible, have those physical defects corrected. Those children whose life blood does not run red because of insufficient food should have that deficiency supplied.

Our concern for these children is first for them, that they as individuals may measure up to the fullest measure of usefulness, health, and happiness. We want them to be able to enjoy every blessing in life that might be theirs.

There is, however, also another phase which must not be forgotten. We must think of a future North Carolina.

Parents have no greater duty toward their offspring than the state has for its children—indeed, selfishly speaking, they have not nearly so much. The life of the parent is self-limited; the die for him is already cast; his position in society and in life is already established. The achievement, or the failure, of his child can influence but little the parent. The life of the state is not self-limited, and its future will be exactly what each succeeding generation makes it. The parent, because of parental love, gives his life for his child, asking nothing and receiving nothing in return save the consciousness of complying with one of nature's fundamental instincts to perpetuate the species, while the state depends for its very existence upon the children it nurtures to-day. That is why the state must step in and do for its children what the individual parent may be unable or, because of ignorance, unwilling to do. *The parent's extremity is the State's opportunity.*

When Governor Aycock declared for universal and compulsory education he lifted the state from a quagmire, and on every schoolhouse hill he lit a beacon fire leading the way to progress. We must admit that, with all of North Carolina's wonderful history, which we hold in reverence, this awakening to the importance of universal education was the dawn of a new era for the state. The fruit of that labor is a generation who today are making the world sit up and take notice.

If the state provides schools and compels attendance thereat, then by all right and justice she must see that the handicaps of the sub-privileged child are removed. To compel a child to go to school, whose physical condition is such that it cannot keep abreast of its normal fellows, is not only brutally cruel to that child and is wasting the state's money, but may actually so embitter that child against society that an outlaw criminal is developed instead of a helpful, productive citizen.

In so far as parents have knowledge and are able, they should be responsible for the correction of the defects of these underprivileged children, but where they don't know, or where they can't, or where they won't, then the state, for its self-preservation, must.

Psycho-analysts have directed our attention to the fact that seemingly insignificant events in the life of a child have been the determining factors in shaping the future career of that child. We are all fully aware of the fact, from personal knowledge, that many children have become disgusted with school because for some reason they could not or did not thoroughly understand the work they were expected to master. They then were impressed with their inferiority. To the subtle, and possibly unintended ridicule of others, is added self-ridicule, which aggravates the situation; and what was at first perhaps an innocent failure develops into an antagonistic attitude toward fellow pupils, toward teachers and school, and finally toward all society. In the life of most criminals, if the facts

can be fully brought out, will be found some incident which, unrecognized at the time, started them on a career of rebellion and crime.

Perhaps the child first failed in school because defective vision made it impossible for him to see as other children saw. He was branded stupid and listless. He fell behind in classes until at fourteen he was where he should have been at nine or ten. Then, in disgust at his own failure, he finally rebelled against further effort and contented himself with filling the place of an inferior drudge in society; or, fired by the spirit of battle, he determined that all society was his enemy and therefore he became the enemy of all society. Effective correction of defective vision at the proper time would have cost possibly five dollars, whereas, directly and indirectly, the life of crime of a Gerald Chapman has cost human life and hundreds of thousands of dollars.

Theodore Roosevelt said that when proper glasses were fitted to his defective eyes it opened up for him an entirely new world of which he heretofore had known nothing. It happened that defective vision was not his only handicap, and that this, together with other handicaps, was such that he was never permitted to attend any form of public school until, after these handicaps were sufficiently overcome and he had been prepared by private tutors, he entered Harvard College. Except for the removal of these handicaps it is indisputable that Theodore Roosevelt would have been a charge throughout life on his family or on society, and by the removal of them he was permitted to become the very personification of dynamic energy and the inimitable Theodore Roosevelt. Certainly not all children can become Theodore Roosevelts, even with every advantage given them; neither will all children become outstanding criminals, however great their handicaps may be; but between every extreme there is a general average. Handicapped children reduce this general average, while children who are guaranteed their inherent rights raise this general average.

To the physician more than to any other is permitted the privilege of recognizing these seemingly little things in the life of children which influence and determine their future place in society.

Almost unbelievable progress has been made in recent years in prolonging human life. In 1800 the average age at death was thirty-three years; in 1900 it was forty-two years, and in 1925 it is above fifty-four. A generation ago it was tuberculosis which led all causes of death, sickness, and poverty. Today heart disease is the greatest single cause of death in the United States. Of every ten people who die of heart disease, nine are over forty years of age. As conditions which caused early death have been brought under control and as the average span of life is increased, more and more people arrive at the age when heart disease becomes manifest. There is no indication that heart disease today is more prevalent than it has always been, but it follows that the greater the number of persons who live to the age when heart disease is manifest, the greater will be the number who succumb to this condition. In 1900 the average age

at death was forty-two, which is before the age when heart symptoms become outstandingly manifest, and hence, although people were suffering from a serious heart condition which very soon would have proved fatal, yet some intercurrent condition developed which killed them and thus got the credit for the death.

Of all serious and ultimately fatal diseases, those of the heart are of the longest duration. For every death from heart disease in any given year there are probably seventeen or eighteen patients still alive who are suffering with it, whereas the comparable ratio in tuberculosis is about seven cases for each death. Tuberculosis does its damage much more quickly.

Today heart disease in a recognizable form interferes with the work, play or comfort of 2,000,000 people in the United States. At least three of every hundred men and women of working age must reckon with heart disease as a disability in their work or a handicap to their pleasure. Fifteen of every thousand school children have already acquired some definite disorder of the heart. One bed of every ten in the general hospitals of the country is used continuously by a heart patient. One of every four people who visit the dispensaries comes because of some heart condition. The mortality curve from heart diseases rises as the mortality curve for other diseases comes down. The time to cure or prevent heart disease is seventeen or more years before death from heart disease occurs. The mortality curve and the incidence curve of heart disease will, however, fall in consequence of concerted effort, just as truly as it has fallen in tuberculosis, but the results will be recorded only years hence.

If we are permitted to use the term "rheumatism" as denoting that class of infections which present rheumatoid symptoms, then rheumatism and syphilis are THE causes of heart diseases. Since both rheumatism and syphilis are preventable, then heart disease is preventable. In the exact proportion to which we eliminate focal infections and rheumatism in children, and syphilis, will the mortality curve for heart disease in future years come down. In the sense that infections and syphilis are communicable, so is heart disease communicable.

The past generation of the medical profession is responsible for the present mounting importance of heart disease. Will the present generation of the medical profession permit the curve to continue high when today's children pass the age of forty?

Cleaner mouths, fewer diseased tonsils, fewer neglected decayed teeth, earlier recognition of sore throats, and quick care in their treatment as serious infections, considerate and skilled attention to the little child with aching muscles but accused of having "growing pains," repeated careful examinations of the heart after attacks of any acute infectious fever, and the conscientious separation of the sick from the well, are the means and the only means whereby the number of heart victims will be reduced.

It is a pitiable thing to see a child with physical or mental defects—conditions for which he is in no sense responsible—which make it impossible for that child to properly "carry on." What is still more heart-breaking is to see a child maimed for life, becoming a charge on society, and a burden to itself, because of some physical defect that could easily be corrected. And yet if we will but open our eyes that is exactly what we do see on every side. Not always cripples going about in wheelchairs or on crutches, although we do see that, but living souls and human intellects, maimed and dwarfed, content to be nonentities in life, doing drudgery or crime.

With the daily increase of knowledge concerning these facts, the people are demanding more and more of their doctors, their teachers and their state that these handicaps be removed. And—the important thing is—they are being removed. The state more than ever is awakening to her responsibility, and stepping in and doing for her people of all ages and conditions in life the things they demand. Her people are keeping pace with the world in the path of progress. Her future promises all the rewards of honest, altruistic endeavor.

Cyrus the Great, on one of his military campaigns, wrote a personal, confidential letter to his father in which he explained, among other things, that he had provided his army with competent physicians. The reply of his father to this point is as pertinent today as then, and affords an excellent conclusion for this paper. He said: "But these physicians, my son, of whom thou speakest, are like menders of torn garments, and thus they cure those who have fallen sick. Thy chief anxiety should be to provide for health, for thou oughtest to take care to prevent thy army from falling into sickness at all."

THE PLAN AS ADOPTED BY BEAUFORT COUNTY FOR THE CONTROL OF MIDWIFERY

J. W. Williams, M. D., Health Officer
Beaufort County, Washington

At the last meeting of the health officers, Dr. Harden closed his most excellent discourse on Midwives with this suggestion—Recognize the midwife, place her under control, and gradually elevate standards to the extent that only the more intelligent SHALL remain in practice.

This paper is only an Amen to Dr. Harden's prayer for better obstetrics, and report of an humble beginning to carry out some of his suggestions and thereby directly help my country, its mothers, and my friends and co-workers, the physicians.

Beaufort County had 112 women listed as midwifes, who were delivering 48 per cent of the babies; her mortality was high; debris from bad obstetrics was evident. How much was the fault of the midwife no one knew, but that something should be done was a fact. To find out what could be done, we asked the doctors.

An informal discussion of the subject, in meeting, brought out the following facts:

First, in our county, most obstetrical cases were visited only one time—at the time of delivery. In other words, the physician was introduced to the mother, delivered the baby, and said good-bye. If he returned, he was called, and of course that never happened unless something was wrong. Just how wrong depended upon the intelligence of nurse, neighbor, or granny, or grave visible signs.

Second, the midwife was called to the case first, if for nothing else but to let the family know when to send for the doctor, after his arrival to be used as he saw fit, either to wake him up when pains got harder, prepare the bed, administer an anesthetic, hold a leg, steady a forceps, receive the baby, bathe and dress it, or in some instances, to instill silver nitrate, dress the cord, clean the patient, and leave in charge.

Third, the midwife, a few minutes after the physician left the house, was the whole show, to boss the entire family, and, from her great store of wisdom, dictate methods to call a mother from the valley and launch a new being into a life beset with qual jeopardies.

From these facts we decided that evidently in Beaufort County abolition of midwifery was out of the question, maybe forever, and that we must educate and pray to God; that so long as the present manner of handling obstetrics is continued by physicians and laity the midwife will remain in practice.

Remember, gentlemen, I am speaking of men who are physicians, just as you and I; who are just as conscientious, sympathetic, and competent. These details were frankly discussed as conditions in our county. To that obstetrician whose patients employ him early in pregnancy, whom he watches, sends to the hospital, delivers, and from whom he collects a reasonable fee, this paper has nothing to offer but congratulations upon having already reached an ideal we are setting for an entire county.

The health officer sees the results of all, including the midwife; the average physician sees the results in only his cases, but when confronted with conditions that with his coöperation can be bettered he generally enters whole-heartedly.

In regular meeting the physicians drafted laws to govern midwives, adopted a suggested plan of teaching and subjects to teach, and officially obligated themselves to attend any labor case that they were called to, and, if measured by plans proposed, it was classed as an indigent case, to accept a fee of $12.50 as settlement in full. We estimated the number of actual indigent cases would be about 75 per 1,000 births, the money to pay this fee to be raised by the health officer in any way he could, from funds, societies, churches, or charitable individuals.

This meeting of the physicians and the spirit predominating was the first real and the big step towards midwifery control. One physician proposed that, as the health department was obli-

gating to teach all pregnant women that the only person competent to care for them was a painstaking, thorough physician, and in abnormal cases to see to it that only such did attend them, the society could afford to take care of indigents without a fee. This remark, with the fact known, that we have no endowed wards or free hospitalization, and that most of the work is rural, shows the real interest.

With all steps of the work agreed upon, we presented the following laws and rules to the health board for ratification.

Under the authority and direction of Consolidated Statutes, Chapter 118, Article 3, and Sections 7065 and 7066, the Board of Health of Beaufort County hereby enact the following rules and regulations which shall govern the practice of midwifery in Beaufort County.

Section 1. No person other than a regular licensed physician shall engage in the practice of midwifery without first qualifying and obtaining a permit from the county health officer so to do.

Section 2. To be entitled to a permit, the applicant for such shall satisfy the health officer that she is without serious physical or mental impairment and free from communicable infection.

Section 3. To be entitled to a permit, the applicant for such shall file with the county health officer certification from at least two reputable citizens of the county, which shall set forth that the applicant is of good moral character and not addicted to the habitual use of intoxicants and habit-forming drugs.

Section 4. To be entitled to a permit, the applicant for such shall have taken a prescribed course of instruction for midwives, which has been approved by the Beaufort County Medical Society, and shall have satisfied the county health officer that she is reasonably informed with reference to the course of instruction.

Section 5. When any midwife shall have complied with the requirements of sections 2, 3, and 4, and shall have been given a permit by the county health officer to attend cases of labor, the said officer shall register the name and address of the midwife with the North Carolina State Board of Health.

Section 6. Any permit which has been issued to a midwife under sections 2, 3, and 4 of these regulations shall be null and void on the first day of January following its issuance, and in order for a midwife holding such a certificate to continue to attend cases of labor, it will be necessary for her to secure a new permit.

Section 7. No midwife shall attend a case of labor or assist in the delivery of a woman who has not been approved as a safe case for the care of a midwife by the county health officer: *provided,* that this regulation shall not apply when a midwife is consulted in regard to the attendance upon a woman in labor within less than ten days of the occurrence of labor, in which case she shall notify the county health officer at the earliest possible time of such request for her services.

Section 8. The permit shall become null and void if it is proven to the satisfaction of the health officer that the following rules and regulations have been wilfully and needlessly violated:

Rule 1. If the midwife has attended or engaged herself to attend a case of labor that is classed as strictly a physician's by the following condition:

(a) When the patient has had hard labors with earlier confinements, or has had to have her babies taken.

(b) When the mother has had fits or convulsions.

(c) When the mother is dwarfed or deformed.

(d) If the mother is vomiting badly.

(e) When there is swelling of the hands or feet, or if she has had dizzy spells or spots before her eyes, or bad headaches, or if urinary analysis shows pathological conditions.

(f) When there is bleeding before the time of labor.

(g) When there are dangerous varicose veins.

Rule 2. If the midwife has attended a case of labor without notifying a physician if any of the following conditions arise:

(a) Any part of baby comes first except the head.

(b) If the mother has fits or convulsions.

(c) If the mother is in labor for twelve hours and has made no progress.

(d) If the mother complains of headache or has blind spots.

(e) If there is too much bleeding.

(f) If the mother shows signs of wearing out or is faint.

(g) If there is tumor, swelling, or abnormality of the birth canal.

Rule 3. If a midwife has attended a case of labor and failed to observe the following:

(a) Must report the birth of baby within five days.

(b) Must use eye drops in baby's eyes immediately after birth.

(c) Must not pass her finger or any instrument or give an injection into the birth canal.

(d) No drugs must be administered or prescribed by midwives (castor oil or mild laxatives excepted).

(e) Must notify some physician of any unfavorable condition existing with baby or mother.

(f) Must notify physician in all cases of miscarriage.

Section 9. Any midwife violating any of these regulations shall be guilty of a misdemeanor, and subject to the penalty imposed by section 7066 of the Consolidated Statutes. The permit of any midwife found guilty of violating any of the aforesaid sections is hereby declared null and void.

Section 10. These regulations shall be effective from..... day of.....

Section 6 gives me the power to correct any oversight on my part every January.

Section 7 gives me the name of every woman who has engaged a midwife, and my nurse a chance to see the woman and talk her into using a physician, and to use the woman she has engaged as a nurse, only. At the same visit, she can observe conditions and collect data for our files.

Section 8 places the only competent man on the case and on his guard. Rule 2 of the same section hastens the physician to where he is badly needed. Lastly, miscarriages can be explained if they have to be.

Where doctors and money are plentiful there might be added one more section, namely: All primiparae shall be attended by physicians. This would start the young mother right, and she would never be willing to go down the scale in seeking aid at such times.

The next move in our program was to see that every midwife knew this law. In this we were fortunate in having Dr. Helen Moore, of the Child Welfare Association, and their colored nurse, Lillian Newsome. I had heretofore done as other health officers, met my midwives from time to time, talked danger signs, cleanliness, and the advantage of passing responsibility to the physicians, but now we organized small classes just as close to the homes of the midwives as possible, and, backed by section 4 of our law, could demand class attendance. Our list of midwives was culled; as most of them were elderly, nature had aided us, some were dead, some paralyzed, and some too old to learn new tricks. We found seventy-five we were willing to give the benefit of the doubt and attempt to teach. The others were told that never again must they attend a labor case alone, and if any one was interested enough to ask why, we had a satisfactory explanation on file.

The class work was not time spent in talking, for the first lesson to learn is that you can not tell the majority of them *anything*. It is kindergarten work, or demonstration. To this demonstration were carried a doll bed, doll, sheets, pads, lysol, buckets, pans, soap, water, brush, nail file, cotton, gauze, syringe, scissors, tape, silver nitrate, boric acid, oilcloth, baby outfit, blank certificate, cap, gown and bag.

Each midwife was drilled in the danger signs, the law, and the use of every article mentioned, and she was required to demonstrate its use. She gave an enema if the water had not ruptured and the pains were not too hard; prepared the bed; scrubbed each hand five minutes by the clock, then used lysol solution; she washed up the patient, using a separate piece of cotton for each stroke. In other words, she was shown every step of the way, just as the nurse in the hospital, only in the midwife's case it is an over and over process. It was a game of "play 'tend," as their old baby

minds caught the spirit of the work, and each step of it was conscientiously taken, from the time she demonstrated she could boil water until the case was over and she dictated, to some one who could write a legible hand, the data to make a completed birth certificate.

In her prenatal work, telling her to get her patients to rest, drink milk, use plenty of water, inside and out, eat vegetables, etc., did not go far, but a big cardboard, with pictures (cut from magazines) of these different things pasted on, went home and stayed.

The game gets extremely interesting to these midwives, and even to the nurse who is teaching. They go back to other days, and it gets so real that sometimes you actually see hemorrhage, but we older folks just looking on know it is really red ink. Better still is a visit with her to the home of a prospective patient. This mother has said she wanted her, so let's talk it over to see the difference in this patient and the other one seen with her; let's see if we can not convince this mother that the doctor is the best help she can get; let's tell her about the care of herself and baby, leave her a book to read about it, show her about the wardrobe, using the actual garments as examples. A negro is a great mimic, and it isn't long before she can not only talk it but act it.

This may sound sentimental, gentlemen, but it is the game and it will work. If you or your nurse can not enter into it with patience, an ideal, or love of it, please do not attempt to control your midwives this way.

All my white midwives did not meet with the common "niggers," and all my white midwives will not be taught, but we are carrying these demonstrations to their homes and the majority get just as interested as the negroes. Those that will not must not practice midwifery.

Extra pains are taken with the younger and more intelligent ones, and all we have attempted are thoroughly sold to the fact that it is better to be a nurse and know how to aid a physician than to be a doctor, not knowing what to do and afraid the health officer will find you out.

This method we have adopted is getting obstetrics into the hands of competent men, and by doing so is going to reduce our mortality and lessen invalidism. It is a program in which I feel that I am working directly for and with the physicians. I am not delivering any woman. The patient chooses her physician. I am seeing to it that she does so, and this method makes it possible for good or bad case, black or white case, to have a reputable physician. With just a little patience on the part of the doctors towards the midwife, to prove that what we have been teaching her are facts, I am sure she will be more than willing to become a nurse.

I claim no credit for this program, as every physician talked to has contributed something, as you will if you discuss it freely. Of course Dr. Rankin has helped with his legal terms and his "Go

to it," and Dr. Taylor with his "Better get that wording right," but I feel that it belongs to the Beaufort County doctors, and that I am their agent. The feeling is a good one.

As my paper deals only with the midwives I can not go into the regular maternity and infancy work, but one is blended with the other, and a perfected program requires a thousand and one details. Remember, we are dealing with a case that will not run over nine months. Speed is necessary, and system aids speed.

The midwife is there first, is left there, and it is necessary that she be taught; and I claim that through our educated midwife we can get in quicker, closer contact with a patient and can act as a confidential go-between to her and her physician when we have succeeded in convincing her of his value. If, from false modesty, habit, poverty, or just natural stinginess on the part of her husband, she still insists on having the midwife, we do not tell her she can not have one. If the case is abnormal or the history bad we have taken care of it in another manner. We have taught the midwife not to attend such cases. Some people may say she is afraid to do so, but I know that she does not wish to.

A colored trained nurse to help the health officer in his work of rounding up the midwives, visiting their homes, visiting their patients with them, teaching and even bossing them is invaluable, but any intelligent maternity nurse with tact and patience can, in a few months, teach your midwives to love her and mind her and, after the manner of all things human, that is control.

DISCUSSION

Dr. L. A. Crowell, Lincolnton: I am not a general practitioner, and I just happened to drop into this section a few moments ago. I am a surgeon. However, I want to say that that is the most interesting paper I have heard since I have been at this meeting. It touches the very things that should be touched on in North Carolina. It makes me proud of our health work in this state. I know that only 35 counties in North Carolina have whole-time health officers. I shall do all in my power from now on to get a wholetime health officer in our county.

I think it is the most wonderful work we can possibly do. I think that this thing of allowing midwives and uneducated people to wait on our daughters and our wives is a most regrettable thing and should never be tolerated in these times of progress.

Ask yourselves this question: Would I intrust my wife or my daughter to the care of these ignorant midwives, when there are plenty of good physicians in North Carolina to take care of them and take care of them properly? As the doctor said in his paper, once you have a doctor with your wife or your daughter, or with the women of North Carolina, you will never again have a midwife.

I think it is a shame and a disgrace that they are practicing that profession in North Carolina today, and I am really ashamed of it.

I want to thank the doctor again for the pep he put into the paper and for the interest he manifested and the impression it has left on me. (Applause.)

Dr. E. R. Hardin, Health Officer Robeson County, Lumberton: The practice of midwifery is an institution as old as the dawn of history. It is wrapped up with tradition and superstition, false modesty and, above all, economic conditions. This is the reason why we have the midwife saddled on us today in such large numbers.

We all know that we cannot tell just how big a menace a midwife is. We do know that probably nowhere in the world does the midwife thrive as she does in this country, with practically no restrictions of any kind. Many European countries have realized this danger and have made a great many laws and gone to a great deal of expense to educate the midwife. Then, too, they have a different type of midwife from the midwife of this country. The European midwife is naturally a more intelligent person, a person who has had some education and some training. The great majority of midwives we have to deal with in this country belong to the foreign element in the North or the negro race in the South. Practically all of them are ignorant and untrained and most of them filthy, and lacking in even rudimentary knowledge of the hygiene and care of a woman in pregnancy and labor.

The program Dr. Williams has just discussed in his paper contemplates restriction of midwifery, not the elimination of the entire body of midwives at one time. We realize at the present time this is impossible, but what we want to do is to eliminate the worse type of midwife, the most ignorant, dirty and vicious type, the type that cannot be taught even the simplest things; and to gradually train the others until we have a more intelligent, more capable class of midwives practicing in this country; fewer midwives and more competent midwives. At the same time the program contemplates putting in the hands of the physicians the complicated cases of pregnancy.

We do not know at the present time the mortality as a result of the midwives' activities in this country, but we do know that our maternity and infant mortality is a disgrace, that it stands higher than that of any country in the world, with few exceptions, and that it probably is largely due to the fact that we have so many hundreds and thousands of midwives operating in this country with practically no restrictions.

This program, as I say, contemplates the gradual elimination of the midwife, the better training of those that we allow to remain in practice, and at the same time the placing in the hands of the physicians, where they should be, the complicated cases of pregnancy.

The nurses we have in the field go into the homes and take a history of each case and they find out, what the economic conditions

are and whether the family can afford to pay for medical service at the time of labor.

The program provides that people who are absolutely unable to pay for medical service at this time will get it. The midwife is taught in this course of instruction what complicated cases are, and told that she cannot attend such cases. This is hammered into them from the time the course is begun until it ends.

You would be surprised how readily most of them have taken in this instruction, and how they can answer the questions in regard to the complications and the probable complications of labor. I have found already that the midwives in my county are refusing to attend complicated cases, and that these cases are getting into the hands of the physicians. I have had several physicians tell me already that they have had some of these cases referred by the midwives. It shows that the program is practical, that we can restrict midwifery, and that we already are doing it successfully in some counties; that we have ample law on the situation, and all we need to do is to use the means that we already have at hand—teach our midwives and get rid of those who can't be taught. In that way I am sure that in not many years to come the mortality in childbirth in this country will be a different story.

SOME NEW IDEAS CONCERNING THE MEDICAL INSPECTION OF SCHOOL CHILDREN

W. S. Rankin, M. D., Secretary State Board of Health, Raleigh

I am not going to give a paper at this late hour. I shall merely mention a few principles of a bill that we introduced in the last General Assembly. The whole idea of the bill came to me rather late in the meeting of the General Assembly, and there was considerable misunderstanding on the part of some of our best friends as to certain features of this bill. For that reason, while there was a considerable support for the bill in both the Senate and the House —in fact, the bill had passed the House—I readily agreed to withdraw the bill or have it tabled, and bring it up two years from now. It is a matter that the full-time county health officers should consider very carefully, and probably will consider at some of their state meetings later this year.

I shall mention merely the essential principles involved. At present a child in North Carolina between 14 and 16 years of age is not allowed to enter an industry until that child or that child's parent can show that it is physically qualified to engage in that particular industry. In other words, we have in North Carolina set up and accepted without protest the principle of physical qualifications of children for industry. Get that point first. Now, this bill extends that principle to physical qualifications for children to enter school.

At present the laws of North Carolina require the health authorities, state and county, to go into the schools, find defective

children, hunt up their parents, and educate, beg, and implore them to have these children treated. In other words, at present the burden is upon the state, upon the public, to find the child and beg or persuade the parent to have the child treated in case it is found defective. This law that we submitted shifted the burden of primary responsibility from the public to the parent. It said practically this: that the parents of all children entering school for the first time, first grade children (of which in North Carolina there are 125,000 a year), should have those children examined physically within six months of the time they entered the school, either before or after, you see, by some physician elected, in the counties where there were no full-time health officers, by the county board of education, and in the counties where there were whole-time health officers, by the whole-time health officers, who are now doing this work but who are doing it in a far more difficult way than would be the case if this bill had passed.

The proposed law provided that the scope and manner of the examination should be determined by the Secretary of the State Board of Health, with the approval of the State Superintendent of Public Instruction. It is just as necessary that there should be uniformity in scope of examination, the organs to be examined, and the manner of examination, as there was in the examination of the drafted men in the army. An examination is wanted so that you could compare the physical condition of the children in Lincoln County with those in Onslow and those in Wake County. The scope and manner of physical examinations for school children is a pretty well settled problem, so far as that is concerned, throughout this country. The law really brought in this little idea of centralization, if you will, to provide for the principle of uniformity. Otherwise there would have been as many different kinds of physical examinations, and as many different kinds of classifications of physical defects, as there are counties in North Carolina.

The law required those counties that had no health officers, where the county board of education appointed a medical examiner, to pay him fifty cents per examination. He probably would examine in the course of an hour from six to eight children.

The law further provided that the defects of children should be classified in A, B, C and D classes— again very much after the manner of what we learned in the army. It would have to be a uniform classification in all counties so that one could compare one county with all others, and that basis of classification was to be determined by the State Superintendent of Public Instruction and the State Health Officer.

The law further provided that a parent having a child that was classified as C and D—those having the more extreme defects— should have one of two things done: he should have the child treated, the defect removed, and obtain a certification from the physician or specialist who treated the child that such treatment had been given; or should show to the school board why the child

should not be treated, why it should be excused or why treatment should be postponed. If the State of North Carolina had said to the man: "You must have that child treated, you must have its tonsils taken out," public sentiment is not ready to underwrite that, so we don't say that to him. We say: "You must have that child's tonsils taken out or you must bring that child back here before these five men who constitute our county school board, with their county medical examiner sitting with them, and show that child to those men and show them why that child should not be treated." If they say all right, and in a certain percentage of cases there would be good reasons why the child should not be treated, and if they postpone the treatment or excuse the parent, the parent does not have to have the child treated.

As a matter of fact, but a very small percentage of these defective children classed as having those two extreme grades of defects, C and D, would be excused. You could compare one county with another because the report of the number of treatments in each county would be made to the State Superintendent of Instruction and the State Board of Health. If one county school board excused 18 per cent, whereas the average county was excusing 5.5 per cent, it would be evident that something was wrong.

That law would have put in the hands of the private practitioners in North Carolina two-thirds of those children with defects whose parents could have paid for their treatment, and they would have been treated. There would have been about one-third of those children—I am speaking of the ability of people to pay for medical treatment in the country as a whole—where the parent would have to say: "The reason I haven't had the child treated, and the reason I ask for an excuse from treatment, is that I haven't the money."

Now, the school board is in the position of saying to the parent: "Well, we will have the child treated," because the State of North Carolina has about $50,000 that it divides up among the counties for payment for treatment of the needy. That school board is responsible for deciding in its own county who is indigent and who is non-indigent, who is able to pay and who is not able to pay. They would get their pro rata part of that $50,000, which they could supplement from county funds, and, with a committee representing their county medical society, could arrange for the treatment of those children whose parents could not pay.

That gets rid of this question that the State Board of Health has had so much difficulty in dealing with in the past—the state's making this decision. Under this proposed law the county makes the decision, the county school board acting in coöperation with a committee of the county medical society, and the responsibility is local instead of state, as in the present instance.

Now those are the main features of the proposed law. Of course you have only one grade of school children. The best medical school inspection in the cities of the United States requires an inspection every year of the first, third and fifth grade, about three grades. They try to get a child three times as he passes

through the graded schools, but in a state-wide measure like this of course our requirements would have to be less than that. So we should start in with the first grade.

That bill will come before the next General Assembly, and I am talking to you today about it so that you will know something about it and can support it if you wish. If you want a copy of the bill I will send it to you if you will write to me.

There is one more point I want to make about that law before I sit down. Under the broad powers the county board of health has, which I quoted yesterday, (some of you may not have heard), which apply to this problem and enable the counties to handle the problem of midwifery in the way you have just heard it described, the county board of health in Lincoln County or Guilford County has all the powers of the legislature. They can meet at any time without the expense that a legislature would have. The law giving them power is in these words: "They shall make such rules and regulations, impose such fines and penalties, and pay such fees and salaries, as in their judgment" (whether right or wrong does not make any difference) "is necessary for the protection and advancement of the public health." So I think any county board of health that wants to adopt this proposed school law locally could do so. Certainly they can handle the midwife problem.

I am calling it to your attention today because some of your counties might like to consider the enactment of such a law. This man* has to chase all around over Wilson County finding these children and begging their parents to have them treated. With a law like that he simply publishes in the paper that he can be found at certain times and places to make these examinations, and the parents come in there and have their children examined. He classifies them as having class A, B, C, or D defects, and the parents of those children in classes C and D must have the children treated or they must show a committee of the county medical society and the county board of health why they should not be treated. The responsibility rests then upon that county as to whether or not its people are sufficiently interested in the health of their school children to have them treated and to put up a little money themselves with the money that belongs to them out of the state fund for this purpose.

The responsibility is shifted from the state to the parent, just reversing the present process. It decentralizes this thing that has been causing so much trouble to the State Board of Health.

*Referring to Dr. L. J. Smith, Health Officer of Wilson County.

SECTION ON PEDIATRICS

CHAIRMAN: LEROY J. BUTLER, M. D., WINSTON-SALEM

CHAIRMAN'S ADDRESS:

SOME ASPECTS OF RICKETS

LEROY J. BUTLER, M. D., WINSTON-SALEM

Rickets is a condition which has been recognized a long time. The symptomatology and incidence of this condition were reported by Glisson and his committee as early as 1659, but it is only in the past few years that much progress has been made concerning its etiology. It has long been recognized as a most serious impediment in the development of the child, but we did not know the frequency of this condition until more modern methods of detecting it were developed, such as blood chemistry and roentgen rays. Since then it has been found to be much more frequent than the most careful observer suspected. Until very recently there has been no attempt to reproduce the disease in animals by a restricted diet. The first prolonged investigation was done by Mellanby[1] on dogs, and more recently the rat has been used as the experimental animal.

Rickets is the most widespread nutritional disturbance occurring in the temperate zone. It is found more frequently during the second half of the first year and the first half of the second year of life, although it has been reported in a baby thirty-four days old. It is found in breast-fed babies as well as in artificially fed babies, although not so frequently. Premature babies and twins are apparently more susceptible to this condition.

As to the etiology of rickets, various and sundry causes have been ascribed, such as improper diet, lack of exercise, defective hygiene, bacterial infection, derangement of the secretion of the endocrine glands, lack of sunshine, heredity, etc., but since the experimental work of producing rickets in animals has been studied so intensively the chief etiological factors appear to be postnatal, and may be described as dietetic and hygienic. It was thought at one time that the absence of the fat-soluble A vitamine was the causative factor in rickets, but this has been disproved, as evidenced by the experimental work of Block, Hess and Unger, which demonstrated that an infant fed on a diet minus fat-soluble vitamin did not necessarily develop rickets.

The antirachitic vitamin designated by Park as the vitamin X, as well as the fat-soluble A vitamin, is found to be rather abundant in codliver oil, this oil being practically a specific for rickets. The observer at first thought the fat-soluble vitamin was the etiological factor. Findlay[2] says that there are five factors which definitely influence the physiologic progress of rickets: sunlight, exercise, vitamin X, calcium, and phosphorus, but he does not feel that the true or exciting cause has yet been disclosed.

Hess[3] has shown that heredity plays practically no part in the etiology of rickets; that it is due to a postnatal rather than a pre-

natal condition, as evidenced by his experimental work on rats. Improving the diet previous to pregnancy, during pregnancy, and during lactation did not prevent rickets in the offspring. They also confirmed their animal experiments by showing that infants could not be protected by giving the mother codliver oil during the last two months of pregnancy. He also found from his investigation that the inhabitants of the West Indies were practically free of rickets, but among the infants of the West Indian negroes who have migrated to the United States rickets is exceptionally prevalent. Lack of sunlight plays an important part in the predisposing cause of rickets, as evidenced by the fact that this disease occurs more frequently in the winter months and that it is cured by the use of the ultra-violet rays. Lack of exercise has been particularly stressed by Findlay[2] as a predisposing cause of this condition. In this connection he cited an example: two puppies of the same age and breed which were given as pets to a little boy and girl just before they left for their summer holidays. The girl, not being able to run about with her pet, kept him tied to a garden seat, whereas that of the boy was freely exercised. The dogs were fed alike, and there could be no question of deprivation of sunlight, yet at the end of the holidays the girl's dog had to be destroyed on account of severe rachitic deformities, whereas the one belonging to the boy was a fine, healthy specimen. He also states that children that can neither stand nor walk improve much more quickly with exercise and massage.

The earlier symptoms of rickets are restlessness, irritability, head sweating; teething is delayed, as well as ability to stand or walk; epiphyseal enlargement, craniotabes, costal beading; radiographs of the epiphysis at the wrist will show changes in the ulna typical of rickets, and the blood chemistry will show a reduction in the inorganic phosphates of the plasma.

A subject that attracted some attention is the influence of rickets on caries of the deciduous and permanent teeth. Dick[4] has studied this phase very carefully, and believes that the occurrence of rickets is a very important factor in the production of defective teeth. He reports 586 rickets cases in school children in the east end of London, of which 58 per cent had defective or decayed teeth. These were in children 12 to 13 years old, when practically all the permanent teeth had erupted except the third molars.

It has been my observation that the teeth of colored children appear to be in a better condition than those of the white, although the work of Hess and De Buys shows that the negro is more susceptible to rickets. I investigated some of the records of the dental inspection of the children in the Winston-Salem schools. These examinations were made by Dr. Jones, the school physician. The ages of the children were between six and fourteen years. I selected the reports of 3,148 children, of which number 1,238 were white and 1,906 were colored. In the 1,238 white children, 762 had carious teeth, or 62 per cent; in the colored children 448 had dental caries,

or 23 per cent, showing that the percentage of dental caries was about three times as great in the white as in the negro children, notwithstanding the fact that rickets is more prevalent in negroes. From this report it would appear that rickets does not play a very important part as the etiological factor in dental caries.

The X-ray finding in beginning rickets has been of decided advantage in our early diagnosis. The characteristic early change occurs at the lower epiphysis of the ulna, the radius later becoming affected. In the chemistry of the blood there is a characteristic alteration of the blood. The percentage of inorganic phosphates is diminished. The calcium remains practically normal, unless tetany is associated with it, in which case we get a reduction of the calcium also. There seems to be a seasonal wave of inorganic phosphates, which runs lower in March, at which time we have our greatest incidence of rickets.

In the treatment of rickets we are very fortunate in that we have practically two specifics, codliver oil and ultraviolet irradiation. In prophylaxis, all are agreed that breast milk constitutes a valuable prophylactic measure, as breast-fed babies are not as susceptible to rickets as artifically fed ones. Egg yolk has been shown to possess antirachitic properties, and babies very young are able to take as much as one egg yolk daily.

Hygiene plays a very important part in prophylaxis. We cannot overestimate the importance of cleanliness, fresh air, and sunlight. Sunlight being the most important of these, the babies should be out-of-doors as much as possible and not protected from the sunlight, as is so often the case.

The most reliable and available means of preventing rickets is by the use of codliver oil. A baby a month old may take five drops three times a day without any disturbance of digestion. This should be increased so that at six months of age he receives one-half teaspoonful two or three times a day, although a less amount has been thought by some to afford protection. In view of the great frequency of rickets, I think there should be a routine prophylactic measure used, just as we use orange juice in the prevention of scurvy in the artificially fed infant. Especially should this be done in the winter, when we have our greatest incidence of rickets. Personally, I routinely give all the babies between six and eighteen months of age codliver oil during the winter months, whether the baby is artifically or breast fed.

In the cure of rickets we have codliver oil and ultraviolet irradiation, either apparently being sufficient to cure the condition, although a combination of the two acts considerably quicker. Codliver oil is the simpler of the two, and can be used with a large number of patients. An infant six months old suffering from rickets should receive about one teaspoonful of the pure oil three times daily. It is better to begin with a smaller amount and gradually increase the dosage, as some children do not tolerate codliver oil very readily. In those cases in which the oil is not well tolerated ultraviolet irradiation should be employed. This may be done by

the use of the quartz lamp, the carbon arc lamp, or by sunlight. In addition to codliver oil and ultraviolet irradiation, the child should have a well balanced diet in which there is a green vegetable and probably egg yolk. It should have plenty of fresh air, and massage seems to be of decided value. If the child is overweight he should not be allowed to stand or walk, thereby preventing bow legs. In the severe deformities orthopedic or surgical measures may be necessary.

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THE ANEMIAS OF INFANCY AND CHILDHOOD

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It is not within the scope of this paper to discuss this big subject in an exhaustive manner. Increasing interest and experimentation have brought with them increasing confusion in our conceptions of infantile anemia. The introduction of new staining methods and of methods of studying living cells have brought before us many new ideas and classifications. As one reads the recent literature he is tempted to feel that the advances in our knowledge have made more complicated a subject which has always been confusing. It is natural that this confusion should exist. Science is constantly finding explanations for some of our empirical ideas, and contradicting others. The blood-forming organs of the infant and young child react in their own peculiar way to stimulation from various causes. Classifications are based on different criteria.

It is the intention of this paper to avoid the details of laboratory studies as far as possible. I wish to call attention to some facts, many of them old, which may be of help to us in developing a clearer mental process and a more practical attitude toward patients. The text-book type of description will be avoided. It is rather intended that emphasis be laid on certain conditions about which there is a danger of misconception, or on conditions whose importance cannot be too much emphasized.

Any rational conception of the subject must be based on a clear conception of blood physiology. The condition of the blood at any particular time is the resultant of the opposing forces of regeneration and destruction. On the one hand we have the activity of the bone marrow, portions of the spleen and liver, and the lymph glands. On the other we have the destructive processes of phagocytosis, hemolysis, fragmentation, and increased fragility, phenomena that take place in the blood stream and probably in the spleen and liver. The activity of the bone marrow is normally in exact proportion to the destruction of red blood cells. It has been estimated that from one-tenth to one fifteenth of the red blood cells are destroyed in 24 hours. This estimate may be high. However, the destructive process is normally well below the capacity of the blood-forming organs,

and abnormal stimulation finds an excellent response from the bone marrow up to a certain point. Beyond this point one finds evidence of overwork and overfatigue, this evidence consisting of the appearance of immature and embryonic forms of red blood cells and white blood cells, and of red blood cells deficient in hemoglobin. The reaction of the hematopoetic system of the child differs from that of the adult in several outstanding features; first, in the extreme lability, the low threshold for the appearance of embryonic and immature forms; secondly, in the danger of overdraft on the deposit of iron, with quick and striking reduction of hemoglobin; thirdly, in the tendency to a relative increase in the lymphoid elements; fourthly, the spleen, which has an important blood-forming function in fetal life, is very prone to take on this function in the infant when the hematopoetic system is called on for increased production. And, finally, in this as in other respects, the infant's response to various stimuli, such as infection, is a total response, and all the systems play a part in the fight.

There are numerous classifications of the anemias of childhood, none of which are now entirely satisfactory. Many of these classifications are based on the response of the blood-forming organs as studied in the laboratory—the laboratory evidence of regeneration and destruction. To be useful, a classification must be based on etiology, and on clinical as well as microscopic signs. From this point of view the anemias fall into two general groups, those of unknown and those of known etiology. In the first group fall those conditions that are primarily diseases of the blood-forming organs. In the second group fall that very large group of cases in which we know that the anemia depends upon abnormality in the other systems of the body, from an almost endless number of causes. In addition to these there are certain conditions whose status is undetermined or about which authorities differ.

The primary diseases of the blood-forming organs are relatively few. In this class fall first the leukemias. Confusion about leukemia in the mind of the physician probably complicates the attitude toward blood diseases as much as any other one fact. Here we see again the pronounced tendency of the infantile organism to react violently and totally. So we see a violent and acute reaction, a short rapid course of the disease, the patient usually not surviving more than a few weeks. If one will keep in mind this fact, that any blood disease in an infant that runs a chronic course is probably not leukemia, he is on safe ground. We do see in older children chronic myeloid leukemia, with the hyperleukocytosis, the big spleen, the slowly progressing anemia, and the characteristic remissions, that is a common picture in the adult, but it is rare even in older children and probably does not occur in infancy. The far commoner picture is of the infant or young child who is brought for treatment because the parents have recently noticed that the child is sick, refuses his food, has had high fever, has been bleeding from the mucous surfaces or has ecchymoses in the skin, and has quickly

become very pale. It is found on examination that there is a very striking pallor; petechial hemorrhages are seen in skin and conjunctiva and mucous membranes; there is moderate or marked enlargement of the spleen; usually rather high fever, and marked prostration. The blood gives a basis for diagnosis sometimes on the leukocytosis, but often only on the basis of the predominance of one type of totally abnormal cell, pathological lymphogate or myeloblast And, frequently, in spite of repeated transfusion and all other forms of treatment, the course is rapidly downhill to death in a month or less. It has even been suggested by some good clinical observers that this disease is very similar to many acute infections. It is not my intention to discuss the infectious theory of leukemia. This is mentioned for the sake of emphasizing the acute disease that leukemia usually is in the infant. It is generally the lymphoid type, but recently the question has been raised as to whether the acute myeloblastic type is not commoner than was formerly supposed. An "oxidase" stain on the abnormal cells has often proven that apparently typical immature lymphoid cells were really myeloblasts. Clinically the diseases run the same course.

We must include under this heading also the purpuras. The clinical picture of the simple and hemorrhagic types is familiar to all. The question of diagnosis in these cases is rarely a difficult one. One must always be on his guard lest he mistake sepsis, with the characteristic petechial spots, for purpura simplex. The mistake has often been embarrassing, especially since the treatment and prognosis are so different. One cannot resist the temptation to allude to the frequent appendectomy done on the patient with Henoch's purpura, or on one who has that less familiar condition that Dr. Osler so ably described in 1904 under the title of "The Erythema Group of Skin Diseases with Visceral Manifestations."

In connection, just a word about aplastic and pernicious anemia. It is possible that there is some condition in children that can rightly be called aplastic anemia. Certainly the chances are that a practitioner will see such a condition not more than once in a lifetime. But pernicious anemia, almost by definition, is a disease of middle life, and any such diagnosis in a child is extremely questionable. This is a point that deserves emphasis. One is so often tempted to make a keen diagnosis of a relatively rare condition that he forgets that one of the characteristics of infantile blood is the tendency for the blood picture of simple anemias to simulate the primary blood diseases of adults. Pernicious anemia is a distinct clinical entity, with characteristic blood and clinical symptoms, and these things must be present in order to justify the diagnosis.

Finally, we must consider for a moment congenital hemolytic jaundice. This is a condition that must always be thought of in the examination of an anemic child who shows any degree of splenic enlargement. The outspoken cases present very little difficulty, for the appearance of the child with rather striking jaundice, the history of a similar condition in previous generations of the family,

the great enlargement of the spleen and the history of the characteristic "crises of deglobulization," are a typical picture. One must remember that many of these children present very little jaundice and a less definite history, and are much more difficult diagnostic problems. One must approach the problem with the realization that the most important points for diagnosis are: (1) Family history; (2) Jaundice without bile in urine, and without clay-colored stools; (3) Distinct increase in the fragility of the red blood cells when suspended in hypotonic salt solution. This last test is of the greatest importance, and although it is not one that can be used by the busy practitioner as a routine, yet is a relatively simple laboratory procedure and is diagnostic. It is in these cases that splenectomy has its most promising field.

The anemias of known etiology form the bulk of all cases seen. The causes are almost without number, and a detailed discussion of them will not be undertaken. It is advisable that these causes be grouped into some general classification, and the following seems fairly satisfactory from a practical point of view.

1. Mechanical. Hemorrhage. Hemophilia. Scurvy. Hemorrhagic disease of the newly-born.

2. Nutritional. Faulty feeding. Milk anemia. Prematurity. Rickets.

3. Toxic. Following acute infections. Following certain diseases, especially nephritis, tuberculosis, syphilis, acute rheumatic fever, malaria, pyelitis. Associated with intestinal parasites. Lead poisoning and poisoning with various chemicals. And that following any prolonged illness, such as prolonged gastro-intestinal upsets.

It would be trite to go into a discussion of such obvious conditions as most of the above. I should like to briefly discuss two of these conditions.

The first of these is a condition that is frequently called milk anemia or alimentary anemia. Hemoglobin consists of two parts, an iron-containing pigment, hematin, and a protein, globin. Hemoglobin contains only about 0.3 per cent iron, but this portion is of the greatest importance, for the oxygen-carrying capacity of the blood depends directly on the iron it contains. The globin portion is a very constant factor and is supplied by any ordinary diet. Hematin is a substance closely related to chlorophyll and other pigments found in plants, and the hematin of mammals probably comes from chlorophyll and other related plant pigments. Hemoglobin cannot be synthesized from iron and globin alone, for the pigment element is equally important, but this is usually present in sufficient amount in the infant, and the iron is the element most likely to be deficient. It was shown by Bunge in 1889 that there is a reserve supply of iron in the livers of many new-born animals, and that this is deposited during the last part of pregnancy. He also showed that this deposit is proportional to the normal nursing period of that animal. In the human infant, which nurses relatively long, the deposit is large, and during the first few months is in about five

times the concentration of iron in the adult liver. This supply diminishes rapidly during the first year, and probably more rapidly in the artificially fed than in the breast-fed baby. By the ninth or tenth month this supply is beginning to be exhausted in any exclusively milk-fed baby. In these facts we have the explanation for two of the commonest, and at the same time most easily prevented, conditions the pediatrican sees—the anemia of prematures and the anemia seen in the exclusively milk-fed baby during the latter part of the first and the beginning of the second year. The premature baby never had the iron deposited, and the older baby has used up the deposit. Neither breast nor cow's milk contains an appreciable amount of iron. The figure is given as 0.55 mgm. per liter for breast milk, and 0.17 mgm. per liter for cow's milk. Both clinical and experimental evidence proves to us that at about eight months an infant's diet must contain iron and pigment, or that infant's blood will suffer from deficiency of these substances. It has been maintained by some that there is a substance in cow's milk and goat's milk that actually produces anemia, and there is some ground for this. However, we know that anemia can be prevented by giving iron and pigment-containing food before the iron deposit is exhausted, and we also know that prevention is easier than cure. There are several satisfactory methods for this prevention. Of all the vegetables spinach contains the greatest amount of iron—twice as much as string beans; four times as much as carrots, and twice as much as peas. It is also an easily digested food. Its carbohydrate content is low, and not available by digestion. All these vegetables contain iron and pigment. In addition to these, there is a large content of iron and pigment in egg-yolk and in beef-juice. So we have at our disposal many easily procured and very digestible foods to use for this purpose. One can begin to accustom the infant to these foods by giving about the seventh or eighth month a clear vegetable soup made from several of the above-named vegetables, and giving it nearly fat-free. At nine or ten months the actual vegetables may be given with perfect safety. The prematures must be handled a little differently. Probably the safest method is the administration of inorganic iron in the form of the saccharated oxide or as plain reduced iron, in doses of one-half grain three times daily.

In somewhat the same etiological class falls the anemia associated with rickets. It cannot be said with certainty that this is a specific anemia, separate from that seen as a result of poor hygienic conditions. There are many who maintain that the lessened production of blood is a distinct part of the disease. It is a regular occurrence in cases of well-marked rickets, and seems to reach a greater degree, with more tendency to enlargement of the spleen, than the usual type of anemia that is secondary to faulty hygiene or nutrition. The blood returns to normal quickly, following the administration of codliver oil and exposure to sunlight.

There is a small group of blood abnormalities that must be given a separate heading in a classification. It is to be hoped that further investigation will place these conditions in their proper places as to etiology. At present the conflict of evidence and opinion forces us to discuss them as diseases of unknown etiology and as unclassified.

The first of these is a rather broad group, and probably is composed of conditions due to many different causes. It will here be called "splenic anemia of children." The conditions described by Banti and called by his name is not included under this heading. The child presents the clinical picture of marked anemia, with rather marked enlargement of the spleen, and no adequate explanation for the anemia on examination. The blood picture is that usually spoken of as "secondary anemia," with a greater proportionate reduction of hemoglobin than of red cells, and with relatively few abnormal forms. This anemia proves surprisingly stubborn to treatment, only yielding after a long period, and frequently only after repeated transfusion. These patients may represent instances of prolonged overstimulation to the bone marrow from various causes, acute or chronic foci of infection, etc., where the hematopoetic system has reached a stage of rather profound fatigue, the spleen has joined in to help in the fight, and the whole system is slow in responding to corrective measures. Eventually they will do well under rather intensive therapy. Banti's disease differs in that it has the associated cirrhosis of the liver and a bad prognosis, usually.

I should like to call your attention for a short time to that condition known as "the anemia pseudoleukemia infantum" of Von Jaksch. It deserves special consideration, for its rather indefinite character makes it a tempting diagnosis. It is doubtful whether we are justified in separating this condition from that discussed above as "the splenic anemia of children." It is in this group of blood abnormalities that we are brought face to face with the problem of the peculiar infantile blood physiology. Evans and Happ, in their excellent analysis of cases, reach the conclusion that this anemia, with splenic enlargements and without specific blood picture, forms one large group that differ only in degree and not in fundamental cause.

The condition referred to as Von Jaksch's anemia now includes a larger group of cases than the condition he originally described in 1890 and 1899. His description was of four cases who showed marked anemia, changes in size and shape of cells, a leukocytosis, an eosinophilia, and enlargement of the spleen and lymph nodes. The prognosis was good, as opposed to leukemia. We now think of this condition as an anemia occurring between the ages of six and eighteen months, characterized by a marked reduction of hemoglobin and red blood cells; usually with a leukocytosis; often with an eosinophilia; with the appearance of all forms of immature red and white blood cells of both the lymphoid and myeloid series;

with some degree of splenic enlargement; and with a prognosis that is good as to the effect of the disease itself but bad in that susceptibility to infection is very great.

Certainly we must admit that the line of demarcation between such a condition and anemias due to many known causes is very indefinite. Especially is this true when we consider the peculiar reaction of the infantile blood system.

It is intended that the points that have been dwelt on should direct our thoughts to a very practical lesson. With a large subject in such a state of uncertainty, with many conditions unplaced in a classification, we must feel that our duty to our patients is to so carefully analyze the cases that as many as possible be diagnosed accurately from an etiological point of view. The danger is that we shall pin a bad prognosis on the child whose blood picture tempts us to put it in the class of primary blood diseases. In many of these cases there can be found a cause whose removal will be of untold benefit. This cause is often a very obvious one—rickets, faulty hygiene, faulty feeding, chronic infection, intestinal parasites, or lack of some essential in the diet.

A discussion of treatment would entail going into all the classes of causes, correction of hygiene and habit, regulation of diet, removal of foci of infection, etc. These are fundamental and obvious things. Especially should attention be called to transfusion. This measure has become the boon of pediatrics, and has come to stay. There is an almost endless number of conditions that are more benefited by this measure than by any other. Naturally this is more true of the anemias than of any other condition. One undertakes it with a feeling of relative security, since the child's reaction to the administration of foreign blood is much less violent than the adult's, and the benefit greater and more lasting. It should be resorted to in the marked cases, and promise of improvement is safe. But the bulk of cases will be those whose anemia is to be treated by less heroic means. Improvement in our therapy will be in proportion to our correct etiological diagnosis.

I have attempted to bring out three points:

1. Our knowledge of the anemias of childhood is still in an indefinite state.

2. The infant's and child's blood reacts differently from the adult's to various forms of stimulation.

3. The cause of the anemia is usually a simple one, and the result of treatment dependent largely upon careful search for this cause.

DISCUSSION

Dr. McKim Marriott, St. Louis, Mo.: I wish to thank the Section for giving me the privileges of the floor at this meeting.

I should like to call attention to one therapeutic measure in the treatment of anemias in childhood, in addition to those already mentioned in this admirable paper, and that is splenectomy. It is reasonably certain, as judged from the experience of past years,

that an infant or an adult can get along perfectly well without a spleen, and, furthermore, in some of these anemic conditions they get along very much better.

The particular conditions of anemia in which splenectomy is indicated and of great value are, first of all, in certain forms of purpura. It has been shown by Brill of New York and Minot of Boston that these severe cases of purpura hemorrhagica are at times almost instantly benefited by removing the spleen. In fact, they even describe cases where the hemorrhage stopped at the operating table as soon as the pedicle of the spleen was ligated. Our experience with splenectomy in this condition has been limited to about six cases, and four of these turned out favorably. In the other two, the condition was improved but there were still some hemorrhages.

Another type of anemia in which splenectomy is of great value is the type described by Dr. Bugg as "splenic anemia," whether of the type described by Banti, or the type associated with progressive anemia without cirrhosis of the liver. Some of these children will come in with a red count down to somewhere around a million. They will be given a transfusion. That will bring the blood count up, but a few weeks later it will be down again. Transfusion fails to permanently benefit. In those cases the spleen should be removed. In some cases of the so-called von Jaksch's anemia, splenectomy is indicated, although in most cases, if proper attention is given to diet, and the infant is transfused, the condition will be completely cured.

Dr. W. M. Johnson, Winston-Salem: There are a few things I should like to say in discussion of this paper. One is that children have a relative anemia, as compared with adults. Their hemoglobin is relatively lower than that of adults.

Another point is that in acute lymphatic anemia, while a picture is taken of leukocytosis, just as often you will get a normal or below normal leukocyte count. I have seen three cases in which the leukocyte count ranged from 3,000 to 7,000, and the lymphocytes between 91 and 97 per cent.

Dr. J. Buren Sidbury, Wilmington: I had a case recently that was very interesting to me, and I should like to have some light shed on it by Dr. Bugg and Dr. Marriott, or by whoever may choose to do so.

I happened to see this child the same day that it was delivered, and though the child did not receive a complete physical examination it looked as well and healthy as any child you might see in a nursery, and I went in to speak to the mother and tell her how nice I thought the baby looked. It weighed about eight pounds and was as rosy and healthy as any other baby in the ward.

Two weeks later I was called, on a Sunday, to see the child, and had I not known it was the same child I would not have recognized it at all. The child was absolutely pallid; it looked like a wax doll. I asked the question, "What happened to the baby?

Has he had any blood in his stools? Has he lost blood from any apparent cause?" The answer was "No."

We examined his blood. He had a hemoglobin that could not be accurately read; it was between ten and fifteen. His red cells numbered about 900,000. He had a spleen that was just felt. There were some nucleated reds; there were no myocytes or chorions. We gave the child a transfusion and ten days later gave him another. He made an uneventful recovery. The child has a spleen. He had a negative Wassermann. His blood count at the end of a month was 5,000,000 reds and 75 to 80 per cent hemoglobin. The child required artificial feeding, as the mother did not give him enough.

I had never seen an anemia so rapid and so profound in such a young baby, and I should like very much to have Dr. Marriott or Dr. Bugg or anyone else tell me what they think might have caused so profound and rapid an anemia as this particular child had.

Dr. K. C. Moore, Wilson: Mr. Chairman, I had a case brought to me, just about a month ago, of a child seventeen months old who gave a hemoglobin of 35 per cent, and a red count of 1,100,000. The differential count was 88 per cent lymphocytes, 8 per cent eosinophiles, and 4 per cent polynuclears.

When you first looked at the child, it appeared pretty well nourished, but on looking at it a second time you got the idea that it was a case in which the kidneys had gone to the bad. The urine, however, was absolutely negative. The child had been a breastfed baby altogether, and at this stage, of course, was very much undernourished. It had not taken any other food to speak of.

The case, on the second day, was transfused with 150 c.c. of citrated blood, and four days later a second transfusion of 200 c.c. was given. The child improved considerably after the first transfusion. The abdomen was distended a great deal from the first time I saw it. In fact, I could never be positive as to whether or not I could feel the spleen in this case. But the day before it died (I didn't expect it to die on this particular day), I gave the child a dose of oil and had his abdomen x-rayed, and the x-ray picture showed the spleen extending down to the crest of the ilium.

Three days after the second transfusion, the child seemed to be doing very nicely. Then I was called to come to the hospital quickly one day, and when I got there the child was dead. The nurse told me that just about a half hour before he died the child became very stupid and died very quickly. It did not have a convulsion, and I was unable to determine what did cause its death. My diagnosis was splenomyelogenous leukemia. Just whether it was that or not, I am not sure.

Dr. Bugg, closing the discussion: Mr. Chairman, I am afraid I can't shed very much light on Dr. Sidbury's case. When he first started the description of the case it corresponded fairly closely to one or two recently reported cases, one in particular, of Dr. Foote in Washington, which was an aplastic anemia, and which went on to a fatal end. But the fact that his case recovered and was of such

an indefinite character threw me off that line, and I am afraid I can't offer much information about it.

I am very glad that Dr. Marriott brought up the point of splenectomy. I avoided it somewhat intentionally because there is a great deal written about it, and it seems to me it is a thing that must be accepted as authoritative only from those who have had actual experience with splenectomy in the types of cases where it seems to be indicated. I have seen one case of that rather indefinite group of splenic anemias in which splenectomy was done, and we were under the impression that the child was improving distinctly, but unfortunately an infection set in and the child died.

THE PRACTICAL APPLICATION OF HYDROTHERAPY

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Hydrotherapy may be defined as the use of water in any form, internally or externally, in the treatment of disease. A discussion of any subject is rendered more interesting when it is silhouetted against an historical background. Hippocrates not only used water in the treatment of many diseases, but he taught that it acted both as sedative and tonic. As proof of its real value may be adduced the fact that it is the only therapeutic remedy, excepting diet, of remote antiquity which has survived the searching light of modern science. Among other ancient physicians who successfully employed hydrotherapy may be mentioned Asclepiades, the physician of Cicero, Celsus, the physician of Ovid; Musa, who restored Horace to health with cold baths, and the body physician of Frederick the Great. In 1743, Prof. Froelich, physician to the Austrian Emperor, won a prize offered for the best essay on the treatment of fever by cold water. Despite the indisputable claims of these and other eminent physicians, this method obtained little popularity until the German peasant, Priessnitz, gained such remarkable success with it that he treated in the year 1840 over fifteen hundred patients from many countries. Credit for placing hydrotherapy on a scientific basis belongs chiefly to Prof. Winternitz, who occupied that chair in Vienna. The most important truth which he enunciated is that the beneficial effect of water is gained through its action on the nervous system and that this—rather than the reduction of fever—is the desideratum. To the late Simon Baruch, whose book on hydrotherapy is a classic, must be given the credit of awakening interest in the subject in this country. As a general practitioner of unusual ability, he practiced in Camden, S. C., for sixteen years before going to New York, where his scholarly attainments and clear thinking won the esteem of his colleagues and resulted in 1903 in the establishment of a chair of hydrotherapy in the College of Physicians and Surgeons, to which he was called. Among his colleagues who became ardent advocates of this method of treatment were Austin Flint, Alfred Loomis, Delafield, Frederick Peterson, and the great Osler. For many years this subject has been taught in the leading colleges of Germany, France, and Italy. Largely through the efforts

of Baruch, most of the neuropsychiatric institutions of this country employ warm baths or packs to allay the excitement so common in mental and nervous cases. To witness such treatment will convince the most skeptical of its value. It has replaced the straight jacket as well as the routine use of powerful sedatives. Until this subject is more generally taught in our medical colleges it will not be used to any extent in the home and the general hospital. How long will it take us to realize the truth of the statement made by Dr. Vogl, medical director of the Bavarian army that, "The insufficient education of medical men in physical therapeutics, especially in hydrotherapy, is a serious defect which injures physicians in their earlier practice and for which it is difficult to compensate later"?

Time does not permit going into the rationale of the various forms of water application, but a grasp of this is essential to success. The results obtained depend upon the effect produced on the central nervous system through the cutaneous nerves. As in the use of all remedies, and even to a greater degree than in the use of drugs, closest attention to minute details is the price which we must pay for success. Verily, trifles make perfection, but perfection is no trifle. Among the essentials to be borne in mind are the following: The reaction of water depends upon the age of the patient, skin condition, locality and extent of surface treated, duration of the application, friction, and physical and psychic state. The difference of intensity of effect is proportionate to the difference between temperature of water and skin. Anemic children do not bear cold well. The latter should never be given a full bath below 80°, and in the exanthemata, water below 95° should be avoided. Any hydriatric measure should be adapted to the patient's reactive capacity. Friction is the essential feature of a tub bath.

We shall not discuss the important question of forcing water by mouth in all acute diseases, or, when necessary, of resorting to the stomach tube, rectal tube, or needle. Suffice it to say that a sick infant requires at least three ounces of fluid to the pound of body weight, every 24 hours.

Now let us consider a few conditions with which the physician is confronted, and the application of hydrotherapy for their relief. Fever is the symptom which most often brings the physician to the bedside, and one for which the mother and her garrulous neighbors demand treatment. Fever is one of the body reactions to infection, and the metabolic activities which give rise to it are undoubtedly remedial in purpose, therefore necessary. In attempting to lower a temperature which has reached a certain point, by the use of depressing antipyretics, much mischief may be done. The pressure on the boiler is not relieved by obscuring the steam guage. Do not understand from the foregoing that the writer is a drug nihilist, but drugs should be reserved to meet definite indications. As to what degree of temperature a patient is entitled depends upon the nervous manifestations accompanying it, rather than upon the height of the mercury column. It is well to recall that the normal rectal

temperature—and this is the only reliable temperature—of infants and young children reaches 100°. If the patient is nervous or restless, if he comes of neurotic stock, or has had convulsions on previous occasions, the temperature should be kept below 103°; whereas, in the absence of such conditions, the temperature may, with impunity, be disregarded. In our experience the warm tub bath and the sheet or evaporation bath have seldom failed to quiet nervous symptoms and to reduce temperature. The former disturbs the patient more and is far more troublesome to apply in the home. The sheet bath is given as follows. The bed is protected by a rubber sheet or by several newspapers covered with a folded sheet. A hot bottle for the feet and an ice cap—or small towel wrung out of water at 40° or 50°—should be made ready. Now an old sheet is torn so that it is just long enough to reach from the clavicles to the ankles and just wide enough to surround the body twice. This is soaked in water at 95° or 90°—depending upon whether the body temperature is very high or only moderately so—is squeezed only sufficiently to prevent dripping, and spread smoothly on the bed. The nude patient is placed on this sheet, with his arms extended above his head. One fold of the sheet is carried snugly around the body, then the arms are placed by the side and the other portion of the sheet is carried around them. The lower limbs are wrapped separately, so that the skin surfaces are not in contact. The feet should be kept dry and a hot bottle applied constantly. If it is difficult to keep an ice cap to the head, tie a large handkerchief or a small towel about the head and keep it soaked with water of 40° to 50°. The duration of this bath depends upon the duration of the nervous symptoms and the degree of fever. It may be discontinued after a half hour or used for days. If it is to be prolonged, the sheet should be sprinkled every twenty or thirty minutes with water at 90° or 95°, thus avoiding disturbance to the little patient. If prolonged treatment is necessary, it is well to have two sheets, so that they can be sterilized and used alternately every few hours. A case may be cited where an infant, six months of age, with marked nervousness from lethargic encephalitis, was quieted within a few minutes by a sheet bath after large doses of bromides had failed to produce any effect. Another example is that of an infant suffering from bronchopneumonia and with a temperature of 105° to 106° and marked nervous symptoms. It was necessary to keep this little patient in the sheet bath almost continually for a week. Parenthetically, it may be said that the first application had a much more soothing effect on the infant than on the mother! Shivering is no contra-indication to continuing this bath, but if the lips become blue or the pulse is thready—which seldom happens—friction of the entire body should be used for several minutes and the patient wrapped in a dry blanket and surrounded with hot bottles. In this, as in other hydriatric proceedings, the physician should make the first application, explaining each detail, and incidentally doing much to cure the hydrophobia from which most mothers suffer. When one has convinced oneself of the efficacy of this method, one will seldom

resort to sedatives and antipyretics, which are less reliable as well as more dangerous.

Convulsions, like fever, are symptomatic of some underlying condition, and if severe they demand active treatment even before their genesis is evident. The orthodox treatment is the hot bath, but, in the experience of the writer, the sheet bath is much more reliable when the rectal temperature is above 101° In other cases a full bath of 105° should be used, and continued as long as necessary. Every few minutes sufficient hot water should be poured into the tub—not near the child's body—to maintain the bath temperature.

Collapse occurs in many conditions. To combat this alarming symptom there is no medicinal agent, excepting adrenalin, which acts so promptly and which is so dependable as the mustard bath or the mustard pack, when properly used. The bath is preferable, provided a tub of sufficient size and enough hot water are available. The water should be at 105°. The mustard should be fresh and at least a tablespoonful used to each quart of water. Before being placed in the tub the mustard should be rubbed into a smooth paste with a little warm water. The eyes of the patient should be protected by tying a handkerchief over them. So soon as the skin becomes red the child should be removed from the tub, wrapped in a blanket, and kept warm. If the entire body is kept under water and constant friction applied, reaction should occur within a few minutes; if not, the prognosis is very grave. The pack is easier of application and less disturbing to the patient. The mustard is used in the proportion of one or two tablespoonfuls—depending upon the age of the patient—to each quart of water, two or three quarts usually sufficing. The temperature is that of the bath. Two thicknesses of a sheet large enough to completely envelop the body or, better still, a piece of flannel, is soaked in the mustard water and wrung out, then immediately wrapped around the child. A dry blanket surrounds the wet one, care being taken to wrap the upper edge of it snugly around the neck, to prevent irritation of the eyes. Every few minutes the skin should be inspected to ascertain when reaction has occurred and to prevent blistering. If hot bottles are used to enhance the value of the pack it is important to see that the outer blanket remains dry, thus insuring insulation, else the patient will be blistered.

Lastly, we shall discuss the aid to be derived from hydrotherapy in one of the most frequent and most serious diseases of early life, i.e., bronchopneumonia. Medical treatment is certainly extremely disappointing. While we use it to meet certain indications, if we had to choose between these and hydrotherapy, *intelligently used*, we should unhesitatingly select the latter. It is admitted that it cannot be intrusted to ignorant attendants; furthermore, even an intelligent mother or nurse should have the first application demonstrated to her by the medical attendant. When we recall that in pneumonia we have to deal with an infectious fever rather than with

a localized disease, and that the danger to the patient arises from the toxemia which overwhelms the nervous system, the indication for hydrotherapy is clear. Here we have a condition comparable to typhoid fever, so far as toxic manifestations are concerned, and here, as in typhoid fever, hydrotherapy will prove superior to drugs, which, as Dr. Baruch aptly said, "merely allowed the patient to die with a normal temperature."

No routine procedure is recommended for all patients, or for the same patient at all times, but the symptoms should be met as they arise. Early in the disease, for the relief of nervous symptoms, or, in the absence of these, when the temperature is above 103.5°, it is well to use the tub bath. The temperature of the room should not be below 65°. If the patient's temperature is high, a cloth wrung out of water at 40° or 50° is bound about the head. The tub is almost filled with water at 95° and in this the little patient is placed, with his head resting on the arm of the attendant. Friction is constantly made over the entire body surface for eight minutes, when he is removed from the tub, his body quickly dried, and placed in a warm bed with a hot bottle at his feet. This should be repeated every four hours, the temperature of the water being reduced 2° each time and the duration prolonged to ten or twelve minutes. The temperature of the bath should never be below 80°, and *friction should never be omitted*, as it prevents chilling and adds to the stimulation of the nervous system. If feeding and other necessary therapy is given at the same intervals, the patient will not be unduly disturbed. The success of this treatment is evidenced by the slowing and strengthening of the pulse, deepening of inspiration, and promotion of expectoration. Witness this, then ask yourselves if there are any drugs which can accomplish it. When such alarming symptoms as dyspnea, cyanosis, or heart failure appear, more heroic measures are indicated, for "diseases desperate grown by desperate appliances must be relieved, or not at all." The child is placed in a sitting posture in water of 100°, up to his navel, while two or three basins of water at 75° to 65° are rapidly poured over his shoulders. Follow this by rapid friction and drying and repeat in from two to four hours, as indicated. The sudden stimulus from the impact of the cold water produces crying and coughing, mucus is expelled from the bronchi, the respiration is freer, the skin glows with the increased peripheral circulation, and the cardiac load is lightened, so that the pulse is slower and of better volume.

As a means of detoxication and stimulation, and incidentally for the reduction of temperature, the chest compress serves a useful purpose, particularly where, because of a very low room temperature or insuperable objection on the part of parents, the full bath cannot be used. Two compresses should be made, each consisting of three thicknesses of old linen and one of closely woven flannel. The linen should be of sufficient length to reach from the clavicles to the navel and of sufficient width to surround the body and overlap about an inch on the sternum. Flaps should extend over the

shoulders. The flannel should be cut an inch wider and longer than the linen. One of these linen compresses is soaked in water at 60° and then wrung out. It is now spread smoothly on the dry flannel and the chest is snugly enveloped, the flaps over the shoulders and the edges being secured with safety pins. If necessary, these compresses may be renewed every two hours unless the patient is asleep or the rectal temperature below 100°. Before the compress is removed the hand should be inserted beneath it, and, if the linen is cool, the chest should be dried with friction and the compress not renewed at once. The second compress should be ready before the first is removed, so as to avoid exposing the chest to the air, thus interfering with the reaction. If the patient is very weak, or not seen until late in the disease, or if there is much excitability or insomnia, the temperature of the water should be 70°, gradually lowered to 60°, provided reaction is good. In extreme nervousness we secure a better effect if the compress is wrung only enough to keep it from dripping.

No claim is made that these measures should supplant medical therapy, but their employment, secundem artem, will bring to the physician a sense of assurance afforded by nothing else.

In closing this rambling dissertation, permit me to suggest that the ever increasing tendency for patients to seek the aid of hydropaths and other charlatans is the inevitable result of the neglect of our profession to learn and scientifically apply physiotherapy, which is their legitimate heritage. Did our medical colleges spend as much time teaching this subject as is spent in instructing students in the alleged effects of many worthless drugs with which the pharmacopeia is cluttered, it would be a boon to suffering humanity. One whose privilege it was to know Dr. Baruch can say with all sincerity, in the words of Tennyson, "Yet I would the rising race were half as eager for the light."

DISCUSSION

Dr. B. U. Brooks, Durham: There is very little I could add to Dr. Ward's paper. However, there is one point which was not emphasized that I should like to mention, and that is that the sponge bath, especially the tepid sponge bath, in my hands has proven very efficacious. It does not bring about such a violent reaction, either, from the mother or from the patient. It quiets the nervous system, reduces the temperature, and generally produces restful sleep. I have found it very valuable, and recommend it to those who haven't tried it.

Dr. Ward, closing the discussion: I should just like to say that I agree with Dr. Brooks as to the usefulness of the sponge bath. However, it keeps the patient disturbed all the time, and I think the sheet bath disturbs the patient much less, particularly when he has to be kept in it for several hours, as it is necessary for the attendant to sprinkle the sheet only every ten minutes or so. I think for a short application the sponge bath is very efficacious.

THE INTRAVENOUS USE OF MERCUROCHROME IN THE TREATMENT OF SOME OF THE DISEASES OF CHILDREN

REPORT OF CASES

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During the past year, Dr. Sidbury and I have been attempting to determine in what conditions the intravenous administration of mercurochrome may be of value. We have given it in a number of conditions, namely: acute tonsillitis and pharyngitis; acute hemorrhagic nephritis; streptococcic septicemia; lobar and broncho-pneumonia; typhoid fever; pyelitis; gonorrhea; mastoiditis, etc. In these cases we used the dosage recommended by Young, J. A. M. A., March 1, 1924. In some of these conditions we consider the results excellent; in others there has been no apparent effect for better or worse. In no case have we noted any evidence of harm that might be attributed to the use of the drug.

In several cases of acute hemorrhagic nephritis, the results have been most gratifying; in acute streptococcic infections of the throat, equally as good. In our case of typhoid fever, there was no apparent effect. In gonorrhea this medication showed very little benefit. In one case, we gave full doses, from 5 to 8 mg. per kilo of body weight, every other day, for ten days, before local treatment was started. Neither the amount of local inflammation nor the number of organisms was much affected by the medication. The symptoms cleared promptly in response to local treatment with a 5 per cent solution of mercurochrome. Two cases of lobar pneumonia were unaffected by the drug. In two cases of acute mastoiditis, caused by the streptococcus, the signs and symptoms cleared promptly in response to the intravenous treatment, and we felt sure that these cases were kept out of the hands of our bloodthirsty surgical brothers.

Below, I shall report a few cases in which we used mercurochrome by the intravenous route. The laboratory work in these cases was done by Miss Josephine Lyle, who has charge of the laboratory in the James Walker Memorial Hospital in Wilmington.

Case 1. C. W. White girl; four years old. Diagnosis: Acute pharyngitis; acute cervical adenitis.

F. H.: Negative. P. H.: Had whooping cough and chickenpox two years ago. There have been frequent attacks of tonsillitis for the past two years. She had been treated for malaria several times, when unaccountable fever appeared, but no parasites had ever been found.

P. I.: Three weeks ago the child had an acute attack of tonsillitis, followed by swelling and tenderness of the anterior and posterior cervical glands. The glands had been indurated and quite tender for a week before coming to the hospital. For the past ten days, the temperature had ranged from 102 to 105 daily.

Physical examination: Temperature 104; child very uncomfortable, and appeared quite toxic. The pulse was 125 per minute. Teeth negative. The ears and eyes showed nothing abnormal. There was a serous discharge from the nose,

and considerable obstruction to breathing, caused by big adenoids and swollen nasal membranes. The whole pharynx was acutely inflamed, the tonsils being strawberry red, and considerably enlarged. The left tonsil projected out toward the mid line, suggesting early peritonsillar abscess. There was no membrane nor exudate. The cervical glands, particularly the left anterior group, were definitely enlarged and indurated. The heart, lungs, abdomen, genitalia, reflexes, etc., were negative.

Laboratory findings: Urine: Alkaline; specific gravity 1029; albumin +; no sugar. A few pus cells, and an occasional granular cast. Blood: W. B. C. 22,000; Poly. 90%, L. M. 2%, L. 8%; Hg. 56; R. B. C. 4,000,000. Blood culture gave no growth. Throat culture showed a few cultures of hemolytic streptococcus and a heavy growth of staphyloccus albus.

Treatment: When the patient was admitted local treatment was started, consisting of hot applications over the swollen glands, and swabbing the throat with a 5 per cent solution of mercurochrome. Codeine was given for the pain. As it was not possible to get the patient to take sufficient fluids by mouth, we gave 500 c.c. of N. S. S. intraperitoneally ten hours after admission. At the end of twelve hours there was practically no change in the condition. At the end of 24 hours the temperature was 105, and the local throat signs were about the same as on admission. At this time we gave ten c.c. of 1 per cent solution of mercurochrome intravenously. Six hours after this, the temperature reached normal for the first time in more than a week, and the patient was decidedly more comfortable than she had been before. The temperature remained normal for 8 hours, then went up to 101°. Twenty-four hours after the first mercurochrome, a second dose was given. This was followed immediately by a very severe general reaction, with chill and T. 105°. In a few hours the temperature came down, and after this never registered more than 100°. On the fourth day in the hospital, the condition of the throat was greatly improved. The glands in the left cervical area were still enlarged and indurated, but the redness had cleared, and the mass was not nearly so tender to pressure. The general condition of the child was better, and she was taking sufficient nourishment, without any trouble. Two weeks after admission, the general condition of the patient was good, and all acute signs in the throat had cleared. The tonsils were left ragged, and infected, and there was a small fluctuating point over the left anterior cervical gland group. The tonsils and adenoids were removed on the fifteenth day in the hospital. At this time, the gland was incised at the fluctuating point. Culture of the pus showed no organisms. She was discharged a few days later, in good condition.

Case 2. Girl 3.5 years old. Diagnosis: Pyelitis; chronic tonsillitis.

F. H.: negative. P. H.: Birth and early infancy normal. The progress throughout the first and second years was satisfactory. At the age of two and a half years, the baby had an acute nose and throat cold, complicated by bilateral otitis media. Ever since that time she has had frequent attacks of tonsillitis, and occasionally bronchitis. Several physicians who saw the child advised tonsillectomy, but the parents would not agree. About nine months ago the child was brought to us on account of high temperature. Examination at that time showed very large, badly infected tonsils, and the posterior nares full of adenoid growth. Urine: Acid; albumin+; no sugar; Micro., pus. A culture of the urine gave a heavy growth of B. coli. The physical examination otherwise was negative. Lab. findings: W. B. C. 13,000; Poly. 68%; Eos. 2%; S. M. 30%; R. B. C. 4,000,000.

Blood culture negative. X-ray of the kidney and bladder area showed nothing abnormal.

After giving the standard acid and alkaline treatments, following which the patient showed no signs of permanent improvement, we decided to try mercurochrome. We gave 5 mg. per kilo of body weight. There was practically no reaction. Two days later the urine showed albumin ++, and pus ++. Four days after the mercurochrome was given, the urinary findings were the same as before treatment was started. The same dosage was repeated every other day for four doses. At times we thought there was transient benefit, but an examination, a week after the last treatment, showed as much pus as had been there at any time before. Culture at this time gave a heavy growth of B. coli. Finally, three months ago, the tonsils and adenoids were removed. Since that was done, the general condition of the patient has improved markedly, the color is better, and the child seems to feel good most of the time. By looking at the patient one would decide that intravenous mercurochrome therapy, combined with removal of infected tonsils and adenoids, is specific for such infections of the urinary tract, but when a drop of the urine is examined microscopically enthusiasm wanes, for pus cells are still thick all over the slide. Suggestions will be welcomed.

Case 3. Colored boy, 12 years old. Diagnosis: Typhoid fever.

F. H.: negative. P. H.: Had pertussis and measles in infancy; otherwise negative. P. I.: Onset two weeks ago, with the usual signs and symptoms of developing typhoid fever. I shall not take up your time tabulating these.

Physical examination: Boy undernourished, anhydremic, anemic, and quite toxic. T. 104; pulse 85. The skin was dry, showing no rash (I was not able to make out rose spots on this skin). The mucous membranes were dry and parched. The chest examination gave nothing abnormal. The liver and spleen were considerably enlarged. There was some tenderness to pressure over the lower abdominal quadrants. Physical examination was otherwise negative. Laboratory study showed W. B. C. 12,000; P. 35, S. M.. 63, L. M. 3; R. B. C. 1,800,000; Hg. 40%. Urine: Acid; albumin +; no sugar; acetone +; micro. —. Culture of the blood and stool gave a heavy growth of typhoid bacilli. As soon as the blood report was given, we gave 15 c.c. of a 1 per cent solution of mercurochrome intravenously. There was no reaction. A blood culture, taken six hours after the mercurochrome was given, gave a heavy growth of typhoid. Another culture, 24 hours later, gave the same result. Neither temperature, pulse, nor respiratory curves were affected in the least, by the introduction of the drug into the blood stream. On the sixth day the dose was repeated, with the same results as before, the blood culture being positive before and after the drug was given. On the seventh day in the hospital, a direct transfusion of 600 c.c. blood was given. After this, the general condition of the patient began, and continued, to improve. Liberal liquid and soft diet was given throughout the course of the disease. On account of the fact that the administration of mercurochrome seemed to have no effect on the course of the disease, and that the blood cultures were positive before and after it was given, we decided that the typhoid bacillis was not affected by the drug.

Case 4. White girl, 4 years old. Diagnosis: Nasal diphtheria; acute hemorrhagic nephritis.

C. C.: Bloody discharge from the left nostril, swelling of the glands of the neck, and bloody urine. F. H. and P. H. negative. P. I.: Three weeks before coming to the hospital, the child had a very acute rhinitis, with profuse serous

discharge. Three days after this appeared, the discharge from the nostrils became thick, purulent, and that coming from the left nostril was streaked with blood. This continued for three weeks. During this time, there was very little temperature, or other constitutional symptom. Four days before coming to us, the child complained of acute sore throat. At this time the anterior and posterior cervical glands swelled markedly, became indurated, and were acutely tender to the touch. Two days before coming to the hospital a surgeon cleaned out the nostrils, inspected the sinuses, etc., and found nothing wrong there. The urine had been red in color for 24 hours before she came to the hospital, and for that time the temperature had ranged between 103 and 105 F.

Phys. Exam.: Nutrition and development were normal. Head: Eyes normal; ears normal; nose showed a thick, purulent discharge from the nostrils, that from the left being streaked with blood. The whole pharynx was acutely inflamed. The tonsils were enlarged and strawberry red, and showed no membrane nor exudate. The glands of the anterior and posterior cervical groups were enlarged, indurated, and tender. The chest findings were negative. The abdomen was negative, except for a slight degree of tenderness over the right kidney area. Physical otherwise was negative. Laboratory findings: Urine, Color red; albumin ++++; no sugar; micro. Blood +++; a few fine granular casts. Culture of the urine was negative. W. B. C. 20,000; P. 85%. Culture from the throat showed a few colonies of hemolytic streptococcus, and a heavy growth of staphytococcus albus. Nose culture showed diphtheria ++++. The blood culture was negative. Treatment: As soon as the smear was examined, 20,000 units of diphtheria antitoxin was given. As the patient could not take sufficient fluids by mouth, we gave 300 c.c. of 20 per cent glucose solution intravenously, and 500 c.c. N. S. S. in the peritoneal cavity. The nose was cleansed with boric acid solution, then phenol and iodin drops were put in the nostrils. The throat was swabbed with 5 per cent solution of mercurochrome. Three days after the antitoxin was given, the nose had practically cleared. The child remained quite sick, however, running a septic temperature, which ranged from 102 to 105 daily. At this time there was very little change in the condition of the throat. The urine still showed much blood. The blood culture was negative. On the fourth day in the hospital 15 c.c. of 1 per cent solution of mercurochrome was given intravenously. There was practically no reaction. The day following this, the temperature remained normal all day, and never again went as high as 100. The signs in the throat cleared markedly in the 48 hours following the administration of the drug. Two days after the mercurochrome was given the urine showed only a trace of albumin, no R. B. C. macroscopically, and only a few microscopically. The throat culture still showed a few streptococci, and a few diphtheria bacilli. The nose culture showed diphtheria bacilli ++. On the tenth day in the hospital the general condition of the patient was excellent, the urine was clear; the throat showed no acute signs, and the culture was negative. The culture from the nose still showed a few diphtheria bacilli. Discharged on the fifteenth day in good condition. All cultures had been negative for three days.

Case 5. Colored boy, 12 years old. Diag.: Acute hemorrhagic nephritis; tonsillitis.

Father died of "blood disease" at age of 35 years. Family history otherwise negative. P. H.: Normal birth and infancy. Breast-fed for the first two

and one-half years, and since that time on plow-hand diet. Had never been sick in his life before the present illness.

P. I.: Two days before coming to the hospital, the boy had some fever, and complained of sore throat. This continued until a few hours before coming to the hospital. At this time he complained of severe frontal headache. An hour later he began having severe generalized convulsions. These continued until the intern gave chloroform. There had been no urine in 24 hours, and stools were involuntary.

Physical examination: Well developed, well nourished, coal-black, full-blooded negro. He was comatose. The mouth was held wide open, and the breathing was stertorous. Head: Shape and size normal, with no evidence of injury. Eyes: Pupils reacted sluggishly to light. The ophthalmoscopic examination showed nothing abnormal. The mucous membranes of the nose, mouth, and throat were dry and parched. The tonsils were very much enlarged, strawberry-red in color, and showed no membrane nor exudate. The heart and lungs were negative. The respiration was slow, deep, and at times irregular. The abdomen, genitalia and reflexes were negative. On admission, the temperature was 103°; blood pressure 120-75; spinal P. 15 mm. Laboratory findings: Spinal fluid negative. Culture from the throat gave a heavy growth of hemolytic streptococcus. The blood culture gave the same organism. A catheterized specimen of urine was very bloody, and showed albumin ++++; no sugar; acetone ++++; microscopic —; many R. B. C. and a few hyaline and fine granular casts. The culture of the urine was negative. W. B. C. 20,000; poly. 88%, E. 1%, S. M. 11%. The blood and spinal fluid gave negative Wassermann reactions.

Treatment: As soon as the patient was admitted we gave 400 c.c. of 20 per cent glucose solution intravenously (with 35 units of Insulin), and 700 c.c. of N. S. S. intraperitoneally. After this, the symptoms of acidosis cleared promptly, and in six hours the boy was rational. At this time he voided six ounces of bloody urine. Fifteen hours after this, the urine was plentiful, but still quite bloody. Twenty-four hours after the glucose was given, we gave 20 c.c. of 1 per cent solution of mercurochrome intravenously. A very severe general reaction followed, with a chill, and temperature of 106°. This lasted for a short time only, and in six hours' time, the boy showed decided improvement. The temperature came d wn to 100; he took nourishment, and seemed comfortable. Twenty-four hours after the mercurochrome was given, the boy was much better; the throat condition was much less acute; and the temperature registered only 99°. The urinary output was abundant, slightly acid in reaction, showed no albumin, no acetone; micro. — a thin scattering of R. B. C., and an occasional hyaline cast. Blood culture negative; W. B. C. 13,000; P. 70%.

On the fifth day, the boy was feeling good, eating everything that he could get, and speaking fairly good English for his kind. The throat was slightly reddened, but showed no acute signs, and the culture was negative. The urine was clear except for a trace of albumin. He was discharged on the seventh day, in good condition. I saw him in the clinic three weeks later, and he reported no return of symptoms.

Case 6. White girl, two years old. Diagnosis: Tonsillitis, acute; acute hemorrhagic nephritis.

C. C.: Bloody urine for three days. F. H.: Negative. P. H.: Negative, except a history of frequent attacks of tonsillitis for three months preceding the

present illness. P. I.: One week before coming to the hospital, the baby had an acute nose and throat cold, with very high fever. Three days after the onset the mother noticed that the urine was negative.

Physical examination: Temperature 104; pulse 140; resp. 40. The baby appeared quite toxic. The physical examination otherwise was negative. The urine was very red in color, and showed, albumin - - - and R. B. C. - - - W. B. C. 12,000; P. 65%. Cultures from the throat showed staphylococcus albus and catarallis. Blood culture —; urine culture —.

Treatment: The throat was swabbed with 10 per cent solution of mercurochrome. As soon as the patient was examined we gave 5 c.c. of a 1 per cent solution of mercurochrome intravenously. There was no reaction. Six hours after this was given the temperature reached 98.4°. After this the temperature never went higher than 100°. Twenty-four hours after the mercurochrome was given, the urine showed no blood, and the physical signs of acute inflammation had subsided greatly. On the third day the baby seemed to feel normal; she took the feedings well, and the gain in weight was normal. At this time the urine showed an occasional R. B. C., and a faint trace of albumin.

The patient was discharged on the sixth day. The general condition was good. The urine examination was negative.

From a study of the few cases given above, and that of a number of varied conditions in which we gave the intravenous mercurochrome therapy a trial, we have concluded that in those cases in which the hemolytic streptococcus is responsible for infection, the intravenous administration of mercurochrome is decidedly advantageous; where other organisms are responsible, its value is very doubtful.

DISCUSSION

Dr. K. C. Moore, Wilson: I don't wish to monopolize this meeting, but I am very much interested in Dr. Watson's work with mercurochrome. In fact, I have been using it quite a bit myself.

The first time that I used mercurochrome was when I was seeing a case of puerpural fever. This was immediately after Dr. Young published his series of cases. I was called in consultation on this case. Within just an hour after the administration of the dose the patient was catheterized, and I noticed the urine contained a great deal of mercurochrome. The idea struck me that if mercurochrome was excreted into the kidney in such large quantities in such a short time, it ought to be an ideal treatment for pyelitis in children, and this is the type of case that I have used it in more than anything else. I have not used mercurochrome in any case until after I had tried out the other lines of treatment that we usually use.

So far, my experience with pyelitis and mercurochrome has been all that I could ask. I have not seen a single reaction of any consequence, with the exception of the third dose in one child. This child lived in the country and the first injection was given to her in her home and the last two in my office. She was taken there in an automobile and carried home, or was supposed to be carried home. But at the time she received the third dose it was around

the Christmas holidays and the mother had promised to take her to the stores to see the Christmas things, so she walked her all over town looking at those things. I was called to see her about two hours afterwards. The mother was very much frightened. She said the child was vomiting a great deal of blood. When I got there I found the child was vomiting quite a bit of mercurochrome, and she was pretty sick for a while. She was given small doses of morphin and put to bed, and she came around all right in a very short time.

With this one exception I have not seen a single reaction of any consequence in the use of mercurochrome. I have used it several times in different types of infections, but I haven't seen it save a life. In fact, in the majority of cases in which I have used it, with the exception of the pyelitis cases, I have not gotten any results from it at all, that is, any curative results. There have been two or three cases in which I have given it where I thought I got excellent results for a while, but within a day or so the condition kept on going to the bad.

I saw one case of a general septicemia in consultation, and suggested the use of mercurochrome. It was used and the patient made a rapid recovery. Of course, this one case doesn't really say anything for it.

In discussing this subject with a number of physicians, I have had a good many report severe reactions, some in the shape of a severe diarrhea and others in other forms, and for this reason I have hesitated a little bit in the use of mercurochrome. But in my own experience, with the exception of the case mentioned, I have seen absolutely no contra-indication to its use. (Applause.)

Dr. S. P. Bass, Tarboro: I had occasion to write to Dr. Young a few weeks ago about a case of arthritis to whom I had given mercurochrome with a good deal of benefit, and in reply I received a letter in which he said that his enthusiasm for mercurochrome was still increasing, and he mentioned that he considered it of especial value in pneumonias in children. He further mentioned that it was of great value in clearing up the complications of scarlet fever in which the serum did not act, which coincides with Dr. Watson's findings that it is efficacious in streptococcic infections.

The medical profession has for a long time wanted a substance which would sterilize the blood without injuring the body, and when Dr. Young and his associate, Miss Hill, first advocated mercurochrome our hopes were raised again, but mercurochrome is not the substance which we have been waiting for. There is no question, however, that there is sufficient evidence to show that mercurochrome is of great value and that in certain instances it may even save life.

In January Dr. Young reported 255 cases in which it had been used. Remember that these cases were all rather desperate, and this is what happened: Out of the 255 cases, 42.3 per cent recovered, or were cured, through the use of the drug; there was a marked improvement, possibly due to the drug, in 38.8 per cent; sterilization

or improvement, followed by complications, such as empyema, which had to be drained, 2.7 per cent; failure, 24 per cent.

That speaks pretty well for it.

We feared violent reaction from the use of mercurochrome, but in children I don't believe we get as severe reactions as we do in adults. The salivation clears up quickly when we get it, and it doesn't injure the kidneys appreciably. Dr. Watson mentioned that he used it in hemorrhagic nephritis.

Dr. Judd, of the Mayo Clinic, says that it is of value, but it must be used while the body is manifesting resistance to the disease.

One thing in regard to the use of mercurochrome that I wish to touch on is the use of mercurochrome by mouth. Dr. Young has given as high as 900 milligrams per day to an adult for ten days before getting any diarrhea or soreness of the gums. It is excreted in the urine in large quantities, and can be used to disinfect the kidneys just as it is used intravenously. He also mentions the fact that it greatly inhibits the growth of intestinal bacteria, and suggests its use in colitis and diarrheas of infants, as some of us have used argyrol. I know nothing of that, but simply got that from his letter.

I think that we should use mercurochrome until we get something better, and we should use it early in the cases which we expect otherwise would have a fatal outcome.

Some day we may have a substance which is ideal, and let us hope that it will still give a delicate pink color to the skin, minus the purple tinge, and that the color will be fast. If that is true, then all the girl babies will have to have it, and our fortune will be made. (Laughter and applause.)

Dr. Watson, closing the discussion: As to the reactions, salivation, and so forth, following the administration of this drug, we had only one case that gave any reaction worth counting, and that was in a boy thirteen years old. He had some salivation, for which we gave sodium thiosulphate intravenously, and it cleared up very promptly. Somehow, at first, I failed to learn all there was to know about the metric system, and gave double doses to infants for three or four weeks. We gave ten milligrams per kg. instead of five, and had no reactions severe enough to notice. The case mentioned above is the only one in which we saw any evidence of poisoning, and this one cleared up very promptly when sodium thiosulphate was given.

Dr. J. LaBruce Ward, Asheville, was nominated for recommendation to the President as chairman of the section.

SECTION ON SURGERY

CHAIRMAN: H. H. BASS, M. D., HENDERSON

A DISCUSSION OF EXTRAVASATION OF URINE

CLAUDE B. SQUIRES, B.S., M.D., AND HAMILTON W. MCKAY, B.S., M.D.

THE CROWELL CLINIC, CHARLOTTE

This subject is being presented for your consideration, first, because of the difficulty in differentiating extravasation from other inflammatory conditions occurring in and around the external genitalia and perineum; secondly, because of the rapid and extensive destruction of the tissues involved, should they survive the acute infection; thirdly, because of the persistence of urinary fistulae in many cases and especially those not properly treated in the acute stage; and, fourthly, because of the high mortality in neglected cases.

Rupture of the urethra followed by extravasation of urine due to direct violence cannot be avoided.

Rupture of the urethra due to neglected or maltreated stricture can be avoided in a large majority of the cases. It is to this type of cases that we wish to especially direct your attention. Such cases of extravasation may be placed in two groups:

1. Extravasation following perforation of the urethra in the course of treatment of urethral stricture.
2. Extravasation following perforation due to infection and ulceration posterior to a stricture.

Most perforations take place in the vicinity of the membranous urethra, and in order to clearly understand just what takes place in the extravasation at this point it is necessary to state briefly a few anatomical facts.

The structures of importance are (1) the superficial perineal fascia and (2) the triangular ligament.

The superficial layer of the perineal fascia is attached laterally to the pubic arch, posteriorly to the triangular ligament, and anteriorly it is continuous with the Dartos tunic, the fascia of the penis, and Scarpa's fascia, upon the abdominal wall.

The triangular ligament is attached laterally to the pubic arch. Its base is directed toward the rectum and is attached to the central tendinous point of the perineum, and the apex is directed forward. The membranous urethra lies between the layers of the triangular ligament.

The superficial layer of the perineal fascia and the triangular ligament divide the perineum into two distinct compartments, and these compartments are of great importance in directing the course of urine following extravasation.

When the urethral perforation is anterior to the anterior layer of the triangular ligament, the process usually burrows its way forward into the scrotum, penis, and then spreads over the symphysis and lower abdomen.

When the urethral perforation is between the layers of the triangular ligament, the process spreads towards the perineum and may rupture through it.

When the urethral perforation is posterior to the posterior layer of the triangular ligament, the process usually burrows toward the rectum, pelvis, space of Retzius, or may perforate the peritoneum.

Extravasation due to improper instrumentation usually occurs in the vicinity of the membranous urethra. Strictures are most commonly found here because the membranous urethra is the narrowest part of the urethra, is well fixed by the triangular ligament, and, consequently, is the least flexible. The sharp curve of the urethra forward at this point also renders perforation more likely here.

Patients with this type of extravasation usually give a history of having had a complete or partial retention of urine; they consult their physician, who, in his zeal and earnestness to give relief, attempts to pass a catheter or sound, uses a little too much force, and perforates the urethra. Such a patient in a few hours develops what is commonly called "urethral chill," which is followed with constant, urgent, painful, and futile efforts to urinate. The urine, instead of passing out through the urethra, is forced into the surrounding tissues through the perforation. Such a patient will show an elevated temperature and rapid pulse. On examination there will be found a tenderness and bulging in the perineum or scrotum; rectal examination will show an area of fullness that can be palpated, and the tissues appear edematous. Unless the condition is treated properly and immediately, it invariably pursues the following course: The process is at first localized between the layers of the triangular ligament, but, as it proceeds, it infiltrates toward the perineum, and may extend as far as the tuberosity of the ischium or break through the anterior layer of the triangular ligament and spread into the scrotum, cavernosa, or anterior abdominal wall. Gangrene appears in the deep and superficial structures and is followed by extensive sloughing.

If extravasation is anterior to the triangular ligament the process spreads more rapidly. Radical treatment is necessary at the earliest possible moment. It consists of multiple incisions throughout the infected area and bladder drainage either suprapubically or perineally. If it is possible at the time, the strictural area should be excised and a catheter placed through the urethra into the bladder to secure drainage in this way. The post-operative treatment is important and consists in gradual dilatation.

To illustrate this type of case, we are reporting one that was recently treated by us.

C. W. H. Case Record No. 13900. Single. Age 20.

Patient came to us complaining of pain in the perineum, scrotum, partial retention of urine, and hematuria. This patient had recently had sounds passed. This was accompanied by severe pain in his urethra, bleeding, and more difficulty in passing his urine. There was a history of gonorrhea in 1920, and, following

this, there was a gradual reduction in the size of the urinary stream until several weeks before, when complete retention developed. His first instrumentation was successful, but the second time instrumentation was attempted the urethra was unquestionably ruptured. In a few days' time the patient developed chills and fever and great pain in his perineum. Examination revealed a swelling in the perineum and scrotum, which was extremely tender. In a short time sloughing started in the scrotum and was proceeding rapidly until the patient was given ether anesthesia, the infected areas thoroughly drained, and a catheter placed in the bladder in order to secure permanent drainage. This patient made a complete and uneventful recovery.

In this type of cases one should be exceedingly careful not to force an instrument, but to resort to the use of filiform and follower. After slowly and carefully manipulating the filiform it is seldom that one fails to pass it into the bladder and then he is master of the situation. Followers can be attached to this and inserted into the bladder without producing trauma or causing undue pain.

Extravasation following perforation due to infection or ulceration posterior to a stricture is probably the most common type. It has been called "spontaneous extravasation." The infection and ulceration are usually immediately posterior to a stricture. The strength of the urethral wall is diminished by its diseased condition, and, under the increased intra-urethral pressure brought about by continued straining in an effort to empty the bladder in the presence of a urinary obstruction, there occurs a bulging of the urethral mucosa through the muscular wall. This is followed by abscess formation, which later ruptures and causes an extravasation of urine into the surrounding tissues. This abscess may rupture immediately, or it may remain latent or quiescent until the patient makes an unusual physical effort, causing the abscess to rupture. Another possibility is that the ulcerated mucosa ruptures without abscess formation and extravasation takes place. This form of extravasation is by far the most dangerous, because the urine is always "septic" and the infection spreads rapidly.

On account of the fact that the extravasated urine is infectious and the resulting suppuration destroys anatomical barriers, extravasation in this group is not confined or limited to the different places described by the anatomist. Quite often the cellular tissues on the thigh and buttocks are involved in the process. After the "septic" urine penetrates the tissues the patient develops chills and fever, and unless some radical treatment is instituted immediately the extravasation extends very rapidly into the scrotum, thigh, and abdominal wall, and gangrene starts. When once it starts, it means death to the tissues and often to the patient. According to one authority, a black patch on the glans penis is a fatal sign.

To illustrate this type of case we are reporting one which has recently come under our care.

J. D. F. Case Record No. 14118. Single. Age 56. Male.

This patient came in complaining of pain and swelling in the perineum and inability to empty the bladder. There was nothing of interest in his family his-

tory or past history, with the exception of the fact that four years ago he had enteric fever with retention of urine. The patient's symptoms date from this attack of enteric fever, and since then he has had difficulty at times in voiding. Recently, he was put in a hospital suffering with complete retention of urine, chills and fever. A few days ago he came to see us with the same symptoms.

General examination was negative. Local examination showed an oblong swelling in the perineal region along the median raphe extending from the anus upward under the scrotum. This mass was indurated, definitely inflammatory, and extremely painful. Rectal examination showed a definite dome-like mass extending up above the prostate and vesical neck. The mass, as felt per rectum, was about the size of a turkey egg. Bladder was catheterized and about eight ounces of "septic" urine was withdrawn. White blood count was 16,250, with 85 per cent Polys.

A definite diagnosis of peri-urethral abscess with urinary extravasation was made.

Under novocain anesthesia the abscess was opened and about 6 ounces of pus evacuated. There was a dense infiltration in the perineum, and a definite tract was found leading to the prostatic urethra. Patient did not improve very rapidly, and five days later was given ether anesthesia and the infected areas thoroughly drained. Infection was found extending up and around the vesical neck, and was working its way to the space of Retzius. A catheter was placed in the bladder to insure drainage. This patient is now doing nicely, the infected area is draining, and the patient's general condition is much improved.

The treatment in these cases consists of early and thorough drainage of the infected area by deep, multiple incisions, and bladder drainage, perineally or suprapubically.

SUMMARY

Pain in the region of the perineum or scrotum, associated with chills, fever, and shock, with a past history of partial or complete urinary retention, should call for an examination in the most careful and searching manner, because of the fact that the premonitory symptoms of extravasation are somewhat confusing and may be due to a variety of causes. Fever, chills, and other septic symptoms may be due to a deep peri-urethral abscess, prostatic abscess, seminal vesiculitis, or an ascending urinary infection.

Early diagnosis and the prevention of extravasation of urine by careful management of patients suffering with urethral stricture are the two most important factors.

After the condition occurs, any treatment, to avail, must be a radical surgical procedure with two objects in view; one, to drain the bladder preferably by the suprapubic cystotomy; the other, to thoroughly and freely drain the inflamed areas by means of long and deep incisions.

In passing instruments, should a patient have a past history of complete or partial retention of urine, great care should be taken not to force the sound but let it fall in mainly by its own weight. Where the obstruction is at all pronounced, it is best to use a filiform, which can be attached to a No. 7, 9, or 11 sound, and the patient is given relief safely.

DISCUSSION

Dr. W. M. Coppridge, Durham: This is a very important subject that Dr. Squires has brought up. I am sure he has covered the treatment side of it very fully. I think the most important point in dealing with these peri-urethral abscesses, which are the result of urinary extravasation, is early and complete drainage. We see cases occasionally that have been sick at home for a good while, which have not had the advantage of early drainage. In these cases you always get a very widespread necrosis, and sometimes loss of life.

He also brought up the point of draining the bladder, which, certainly in the majority of cases, should be done suprapubically. If you drain the bladder suprapubically and then drain the abscess thoroughly and deeply you will more likely be assured of good results.

Dr. A. J. Crowell, Charlotte: Dr. Squires has charge of this work in our clinic—that is gonorrhea and its complications—and I am sure he was inspired to prepare this paper because of his observations of the results of improper care of these cases which have fallen into his hands. The thing that I want to especially stress is that we do no harm to the patient, if we find we are having difficulty in getting into the bladder because of stricture or any other pathological condition. The patient is far better off if we use the trocar and cannula, withdraw the urine, and then get better equipped to take care of the patient until it is necessary for him to void his urine again. Of course, you can put a small catheter through a large trocar opening into the bladder and establish continuous drainage. This is necessary in some cases. Above all, we should not use force with improper instruments in trying to get into the bladder. What is true of obstruction due to stricture is true in cases of hypertrophy of the prostate gland. We never fail to get by such obstructions at our clinic, if some one else has not produced trauma by using an improper instrument in an endeavor to catheterize a patient.

Having been a general practitioner for eight years I know full well how to sympathize with the man who is doing general practice and runs upon these cases of retention of urine. He is not prepared to properly take care of them, and so realizes. He could not be prepared because he has not enough such cases to justify him in equipping himself with instruments to properly take care of them. Therefore, I come back to the object of Dr. Squire' paper, in my opinion, which is to warn against doing injury by instrumentation. It is better to do a cystotomy or puncture, in cases of emergency, and get your patient into a hospital where he can best be taken care of, than to use force and do wide trauma with improper instruments. This is a subject that has been neglected, in my opinion, and we have seen some fearful results following improper instrumentation. Hence we feel that a word of warning is not out of place at this time. I do not remember that we have had a paper on this subject since I have been attending meetings of this society, and I think it is a

matter sufficiently important to have our attention directed to the subject occasionally.

Dr. L. A. Crowell, Lincolnton: I am not a urologist, but I was just wondering why Dr. A. J. Crowell and Dr. Squires are getting away from the perineum. I wonder why they could not have drained this case through the perineum and gone into the bladder by this route, where drainage would have been better.

I may be all wrong about this, but if I had had a similar case to the one reported I should have made my opening through the perineum, at the same time opening the bladder, getting the drainage from that source. That would be my idea.

I haven't seen a case of extravasation of urine in the perineum for a long, long time. We used to see them a long time ago. This must be a rather rare condition now. Of course, however, they would see a dozen cases where I would see one.

I do believe this: A man who is not properly equipped for going into the bladder in case of obstruction, stricture, or what not, should be very careful, because you can form false passages there that will later give the man into whose hands the patient falls a great deal of trouble. If I find I can't get in I usually refer them to somebody that I think can do so.

There are two or three things Dr. A. J. Crowell thinks a great deal of. The Presbyterian Church is the first, and the perineal route to the prostate gland is the second. He sticks to this route despite all arguments to the contrary.

It is nice for us to compliment a fellow who reads a paper, but I think that is where we make mistakes. To pat a fellow on the shoulder and tell him that everything he has said meets with your approval is entirely wrong. You can't get any discussion, you can't get any information that way. You want to say something to get the fellow stirred up a little, and then he will say something when he answers you back, and the audience will get the benefit of the discussion.

Dr. H. H. Purinton, Durham: This question of the introduction of sounds is a very interesting one, I am sure. For a number of years I had considerable experience in some West Indian hospitals, where urologists are infrequent and surgeons are far apart.

I have had some terrible cases come to me showing that they had had very bad treatment. False passages were made which never should have been made. Almost any one, unless he is extremely careful, may make a false passage; but I think if one is skilful enough and careful enough there is very little need of it.

I am thinking of a case now which was not a case of urinary extravasation, but is somewhat apropos of what is being said here on the introduction of sounds. A man came to the hospital in the British West Indes and was under my care. I found that he could not pass his urine. The passage seemed to be almost entirely closed. His bladder was very much distended, and it looked as if it were on the point of rupture. I had him placed on the operating table

and I introduced a trocar and cannula into the bladder. The cannula was large enough to admit a No. 10 catheter. Quickly withdrawing the trocar, leaving the cannula in the bladder, I introduced the catheter, and then, with a snap on the end of the catheter so that the urine could not empty from the bladder, I gradually withdrew the cannula, leaving the catheter in the wound. Then I put another snap behind the cannula and removed the other one.

I left this No. 10 catheter in for about two weeks, and the patient's urine was evacuated in that way during this time. Then the urine began to come through the natural passage, the urinary urethra. The patient made a good recovery, but I am very sure if I had undertaken to force instruments into his bladder he would have been in the ground a long time ago.

Dr. Squires, closing the discussion: In the first place I want to thank the gentlemen for the discussion of my paper, and assure them it is appreciated.

I believe that the most important factor in the management of extravasation of urine is the early diagnosis. The second most important factor is careful instrumentation. The third most important factor is free drainage; that is, drainage of the bladder and drainage of the infected area. In regard to the drainage of the bladder it does not matter which way the bladder is drained; whether suprapubically or perineally. We usually drain perineally, because it is the most dependent way to drain the bladder. However, in some cases where extravasation is very extensive we drain both perineally and suprapubically.

Extravasation of urine can in the majority of cases be prevented, provided the operator in the treatment of urethral stricture will use great care in passing sounds. A sound should never be forced; it should be allowed to fall in the bladder mainly by its own weight.

I believe that is all I have to say. (Applause.)

Chairman's Address:

PROSTATISM AND ITS TREATMENT WITH RADIUM AND X-RAY

H. H. Bass, M. D., Henderson

Prostatism, miscalled prostatic hypertrophy, is an adenomatous or sclerotic condition of the prostate, causing obstruction to the outflow of urine through the urethra. Although every adenomatous prostate shows areas of sclerosis and every sclerotic prostate adenoma, the preponderance of tissue is adenomatous. Prostatism should be distinguished from prostatitis, as a prostatitis is an inflammation of the whole or a part of the gland, while prostatism is an excess development of the glandular tissue. Prostatism is a disease of later life. It rarely causes symptoms before the fiftieth year, although one individual case has been reported by Thompson at the age of nineteen. Prostatism is a true neoplastic development, and,

as is the case with other types of neoplasia, the true cause of this condition has existed years before its development. The pathological changes begin early in life, yet there is no clinical evidence of any such change until many years later.

Thompson says that 34 per cent of men reaching the age of sixty have enlarged prostates. The size of the prostate bears no relation to the age of the patient nor the symptoms produced.

There have been numerous theories advanced as to the etiology of prostatism. Keyes says about 85 per cent of all hypertrophied prostates are adenomatous, and about 12 per cent are sclerotic. The consensus of pathologic opinion attributes the adenomatous changes to a true neoplastic process; the sclerotic changes to inflammation. The disease begins as a small adenomatous spheroid beneath the mucous membrane of the prostatic urethra; other small spheroids form, and as they grow they coalesce and become encapsulated by the surrounding tissues—the normal prostatic tissue being crowded outward by the development of the adenomatous masses, which form the socalled hypertrophied lobes and may reach enormous size. Young says that 20 per cent of all the cases of prostatism of an obstructive character are found to be cancerous. I believe that prostatism is due to a true neoplastic change, caused by disturbances of the metabolism of the gland. Whether the changes are brought about from previous pathological conditions or disarranged function due to sexual excesses, is a matter of little importance. Much has been written on the etiology of neoplasia, and some of the latest theories advanced are that neoplasia is an end product of cell formation, and not a primary one; that the genesis is the same, but the end results different; and that they simply grow in different soils. What the surgeon examines is the end of a pathological process instead of the beginning. I think every man should be examined for prostatism after he passes the age of fifty, to ascertain if he has a beginning prostatism.

The most notable changes associated with prostatism are:

1. Posterior enlargement. In a large per cent of cases the lateral lobes of the prostate are enlarged. Such an enlargement may be felt by the rectal touch. The examining finger, instead of impinging upon a scarcely perceptible organ, encounters a large mass, perhaps the size of a plum, perhaps not so large that its upper lobe can not be reached. To estimate the size of a growth, the finger is swept over it from side to side, into the sulci between it and the lateral wall of the rectum, and, if possible, over the top of the tumor. Its increase in all three dimensions may thus be fairly well estimated, and its general elasticity determined. In shape the mass is usually quite globular, but a little furrowed down the center. One lobe may be more hypertrophied than the other.

2. Elevation of the urethral orifice. When the bladder and prostate are normal, the urethral orifice usually lies on the same line as the trigone and the floor of the bladder, but every form of prostatism disturbs this relation. If the growth is purely lateral,

whether on one side or both sides, the tumors lift a fold of mucous membrane at the urethral orifice. If there is general enlargement, the prostate projects upward into the bladder, pushing the urethra above it and forming a bar at the neck of the bladder. The middle of the lobe acts in the same way. Finally, the fibrotic type of prostatism causes a true contracture of the neck of the bladder, with increased elevation of the urethral orifice.

3. The middle lobe. The term is loosely used to indicate any projection in the bladder, be it a bar or tumor. Properly speaking, the middle lobe of the prostate is a distinct outgrowth from the neck of the bladder, or from the floor of the prostatic urethra.

4. Lengthening and distortion of the prostatic *urethra.* The prostatic urethra is altered in length, size and curve. The urethra is always lengthened by the increased size of the prostate, which takes place more on the floor than on the roof. The fates of the prostatic are retention, congestion, and inflammation. The causes of retention are to be found both in the prostate and in the bladder; the enlargement producing an elevation of the urethral orifice or a contracture of the neck of the bladder. The changes disturb the physiological relation of the bladder. When in the act of urinating, the bladder contracts and, to force the urine over the prostatic bar, it is overstrained. In the child, the organ is ovoid in shape with the urethral orifice as its base, but as adult life is reached it settles down in the pelvis. Its trigone becomes more and more horizontal, and, as age advances, it tends to sag more and more, until the trigone becomes the anterior wall of the bladder. Whether this is due to the upright position of man, superinduced by vocation, as lifting, or by straining at stool, etc., I do not know. But I do know that all animals that walk in the upright position are prone to prostatic enlargement. As the base of the bladder settles, it gradually becomes lower than the orifice and if we bear in mind at this age of life that the muscular power of the bladder is gradually weakening as the years advance, it becomes difficult for the prostatic to empty his bladder from day to day. As the result of this, we find that after some indiscretion, as a big dinner or getting his feet wet or some trivial cause, he will have complete retention, and repeated efforts to void by straining produce congestion. Practically all cases of retention are hemorrhagic as a result of the constant straining, in an effort to empty the bladder.

Inflammation. There is always a certain amount of residual urine left in the bladder, which undergoes decomposition, with its resultant irritation, and, as the days pass, we find the old man less able to empty the bladder, until finally the residual urine reaches the point where it completely distends the bladder and he has the *overflow* of *retention.* The ureters become dilated, pus develops, pyonephrosis results, and the prostatic dies with urinary toxemia and uremia. I do not know of any patient that is so grateful to the doctor who relieves him of this horrible condition.

Treatment. These patients are not good surgical risks, although it is claimed by some operators that they have a mortality as low as seven per cent. The cures are not tabulated. While retention in a measure may be relieved, the old man is left in a miserable condition with a drainage tube in his bladder; with a suppurating cystitis; and with a future that none of us would like to face. As stated before, true prostatism is a neoplastic disease, and not a result of inflammation. There is a true hyperplasia of the glandular structures in about 80 per cent of all cases. The result obtained by treatment of adenoma with radium and x-ray, in my experience, has been a great deal more satisfactory both from the standpoint of the surgeon and the patient. However, I wish to make it plain that in any of these conditions I do not confine myself to any one treatment, but try to let my patient be my guide. If it requires surgery to relieve him, I do surgery. If we can relieve the patient without surgical procedure, then we use radium and x-ray. There is no truer saying than that "The best doctor is the best surgeon." There are no cases that require so much medical care, both preliminary and after-treatment. We observe all of the medical procedures in the treatment of these cases by these methods, that we do in surgery. We give urinary antiseptics, such as hexamethylene, 1 gram, three times a day, with sodium phosphate as a laxative. We require the old man to drink an abundance of light water, preferably distilled. We irrigate the bladder daily with potassium permanganate, 1-4000, leaving about two or three ounces in the bladder after each irrigation. This seems to relieve the bleeding and inflammation. We relieve the straining with codein sulphate, grams 1-2, hypodermically P. R. N. We advise a bland diet, with the restriction of proteins and sugars. I do think it is best not to keep these patients too closely confined, as they seem to do better if allowed to walk around and be at liberty, with lots of fresh air and moderate amount of exercise. We use the radium by one of two methods, direct or indirect. By the direct method, a small trocar is plunged into the prostatic mass, guided by the finger in the rectum and sound in the urethra. The radium needle, with the string attached, is passed through the canula and pushed into the tumor. We locate these needles in the prostate so as to produce a cross-fire through the gland. We never use less than five needles, 10-15 mgs. each. These we allow to stay in the prostate from twenty-four to thirty hours, generally about 1,200 mgs. hours, and longer if there is thought to be a malignancy.

One indirect method that we sometimes employ is to make a bougie of wax, with its concavity forward. A small groove is left on the concave surface; the radium needles are enclosed in the brass capsules and placed in the grooves, where they are held in place by a piece of wax or adhesive. After the bowel has been completely emptied, the bougie of wax is inserted so as to hug the enlarged prostate closely, and is held in this position for twenty-four to thirty hours.

Another method that we employ is the one advanced by Dr. H. C. Bumpass, of the Mayo Clinic, in 1922. He uses a cross-fire through the rectum and urethra. I do not believe it is good technique to enter the prostate through the rectal wall, as there is danger of infection. The radium is followed at the end of the twenty-four hours after its removal by x-ray treatment, which is given through the perineum upward and the bladder downward. We use an eight inch spark gap, 2-4 milliamperes, with from 2-5 mm. screening of aluminum, with an eight inch target.

The treatment is given ten minutes each day until we have given one hour. We try to get all of the treatments with radium and x-ray in one week's time. When it is necessary, we use local anesthesia for the insertion of the radium needles. Generally it is not necessary, as the patient is numbed from straining and is not so susceptible to pain.

When there is much inflammation it may be necessary to do sacral anesthesia or local anesthesia of the parts, using one per cent novacain solution, with a few drops of andrenalin to prevent shock and hemorrhage. We treat these cases medicinally after they are radiated, the same as before.

The radium reaction begins in about a week's time and reaches its height at the end of three weeks, and its full effect at the end of six. We have observed no bad symptoms following this treatment, and our results have been all that we could wish for. Within a few days after the treatments the patients will be able to void, the hemorrhage will disappear, the tenesmus will be relieved, and instead of a discouraged, wretched patient, you will have one that will have hope for tomorrow.

SUMMARY

1. Prostatism in 80 per cent of cases is adenomatous.

2. The etiology of prostatism is unknown, as are the causes of other neoplastic conditions.

3. The medical treatment in these cases is just as important as the surgical.

4. These cases are all bad surgical risks, and operative procedures are undertaken to give relief and prolong life, and a cure is an exception instead of the rule.

5. Young says that 20 per cent of all retention cases are cancerous, and that radium and x-ray have given excellent results.

6. Agreeing with Young's statement, that 20 per cent are cancerous, which leaves 60 per cent non-malignant adenomas; and that adenoma reacts just as readily to radium and x-ray as does the cancerous growth, then why not treat all of these cases by these methods, and save the old man the risk of an operative procedure with its poor results?

7. I have done prostatectomies for a number of years and have not been able to get the results that I have gotten with radium and x-ray, employed as I have described.

RADIATION THERAPY OF NON-MALIGNANT UTERINE BLEEDING

R. H. Lafferty, M. D., and C. C. Phillips, M. D.
Charlotte

In a paper on radiotherapy which we presented to this society three years ago we mentioned this method of treatment as being of special value. Until that time the greater percentage of those whom we had treated were patients who had some physical contraindication to operation. Since then we have treated a sufficient number ourselves and have followed the work of a number of other radiologists, comprising altogether a very large number of cases, and we feel that results have been so uniformly satisfactory that we wish to present a report of this work for your consideration.

Our cases range in age from 13 to 55 years. We feel that no woman of child-bearing age should be subjected to radiation until all other measures for producing a cure short of hysterectomy have been tried, as a very small percentage so treated ever become pregnant. About two per cent, as reported in the literature on this subject, become pregnant, and half of these terminate in abortion. If we estimate our percentage only from the married women of child-bearing age in whom we completed treatment (considering this age below 40 years) our cases show 8.7 per cent pregnancy. Patients with or without tumor show practically the same results. If there is a tumor present this atrophies very rapidly. The chief objection we have heard raised to this method of treatment is that the remaining part of the tumor may undergo malignant degeneration. We have not had this in a single case and have found no report in the literature of this occurrence. We have also talked with a number of radiologists of very wide experience who are doing this work, and none of these have had a patient in whom this occurred. The only immediate discomfort to the patient from the use of x-ray is radiation sickness, which can be controlled to a great extent by properly regulating the dose, and directing the diet, and by the administration of corpus luteum intravenously.

The chief symptom complained of as a result of producing an artificial menopause is "hot flushes." If these become too severe they can readily be controlled by the use of corpus luteum intravenously. This symptom is less marked if the menopause is produced gradually instead of by one large dose.

In women of the child-bearing age an effort is made to produce a temporary menopause lasting from a few months to a year. Some of these patients have had recurrence of excessive bleeding on re-establishment of menstrual function, and it has become necessary to produce permanent menopause. Others have remained normal after re-establishment of this function. In older women permanent menopause is deliberately produced at first.

If there is any reasonable question as to whether malignancy is the cause of the bleeding, curettement should, of course, be done, and the scrapings examined microscopically.

Either radium or x-ray may be used, though we prefer x-ray and have gotten better results from its use. In the use of radium the patient may have all the discomforts which may be produced by x-ray, plus submitting to a minor operation, which sometimes requires a general anesthetic and always hospitalization. The menopause is brought on more rapidly, which we feel is not desirable, and if the radium is allowed to remain in the uterus long enough to produce the desired effect it will produce a reaction which is slow in healing, and there may be an irritating discharge from the uterus for weeks. We feel that there may be scar tissue formed in the uterus as a result of this reaction which may possibly act as a predisposing cause of malignancy. Should the patient become pregnant the scar tissue might very probably be the cause of hemorrhage or rupture of the uterus at or before the time of delivery. If there is latent infection in the adnexa there is danger of its flaring up and doing serious damage.

The following is a tabulation of some interesting figures from our records:

Total number treated		102
Discontinued treatment		13
Completed treatment		89
Married women under 40 years of age		23
Married women over 40 years of age		41
Single women under 40 years of age		17
Single women over 40 years of age		8
With tumor		19
Without tumor		70
Treated with x-ray alone	72	Cured 94%
Treated with radium alone	13	Cured 54%
Treated with x-ray and radium	4	Cured 100%
Pregnancies after treatment	2, or 8.7% of those in line four	
Menstruated normally after radium		2
Menstruated normally after x-ray		4

Of the thirteen who discontinued treatment, eight discontinued after having one treatment, four after two treatments, and one after three treatments.

Of the thirteen treated with radium alone, one was untraced. Seven were cured, three of whom were below 40 years of age, who received an average of 385 milligram hours; while the four above 40 years of age received an average of 1000 milligram hours. The large dose was given because of suspected malignancy. Five were not cured, three of them in the child-bearing period receiving an average of 360 milligram hours, while the two above the child-bearing age received an average of 400 milligram hours.

Of the four treated with x-ray and radium, all were above the child-bearing age and all were cured. These received an average of 425 milligram hours of radium and 205 millampere minutes of x-ray

Of the 72 treated with x-ray alone, 68, or about 94 per cent, were cured. 29 of this number were of the child-bearing age and 39 were above. 3 of the former, all young women, one with a tumor, and two without, required a second series. The recurrence in the one with the tumor occurred after abortion. Two of those over 40 years of age required a second series.

The average amount of treatment for those in the child-bearing period was 396 millampere minutes, and for those above this period 275 millampere minutes. There were four who were not cured by x-ray, all in the child-bearing age. The amount of treatment they received averaged only 236 millampere minutes.

Of the 6 young patients who re-established the menstrual function normally, 4 were treated with x-ray and 2 with radium.

Of the two pregnancies, one went to term and was delivered normally of a healthy child, the other aborted at about 6 weeks and still has a small tumor.

In addition to the above series we have had three patients who were passing through the menopause and having a stormy time from the standpoint of the nervous system, but were having no excessive bleeding. The x-ray treatment was given in these cases to hasten the menopause, and undoubtedly the patients were much benefited by the procedure.

Our results with these cases convince us that the method is of great value in saving these women the discomfort of the excessive flow, or from a hysterectomy which would have been necessary had this treatment not been given, thus avoiding hospitalization and the dangers of anesthetic and operation, to say nothing of the suffering.

DISCUSSION

Dr. C. M. Strong, Charlotte: I feel as if these x-ray men are going to put the surgeons out of business, but at the same time I must confess that the x-ray and radium treatments have been very successful. I refer a good many of my cases to Dr. Phillips, and I suspect some of those cases he mentioned were mine originally. When I sent them to him I at first thought I would get a chance at them later on. I didn't, so I confess there must be something in the treatment. It surely is better to cure a woman, as he said, without a hysterectomy, without a severe operation. I believe that it is well established now in uterine hemorrhage, where there is no tumor and nothing that we can tell definitely we should extirpate—tubes and things of that kind—that the radium and x-ray treatment is much better, and I prefer it.

It still leaves us a few tubes to take out and a few tumors to remove, and we are still in the business a little anyway.

Dr. J. D. MacRae, Asheville: It is especially interesting to me to hear a surgeon speak for the use of radium and x-ray. My viewpoint is that of a radiologist now, but I came into this type of work after a good many years of general medicine and surgery.

I was in the habit for a long time of saying, when a case of either of the types discussed was brought to my attention, that x-ray or radium treatment was advisable if there was any contra-indication to surgery, but in the last group—hemorrhage of the uterus—we have come to think that it is the method of choice to treat with x-ray or radium. I believe that one agent is as good as the other. It is a matter of preference whether the menopause shall be precipitated at one treatment with radium or whether a milder method may be used in the application of x-ray treatments over several months' time.

I haven't noticed that the menopause disturbances were greater when radium was used, one application made and the result gained at one session, than with the use of x-ray at three weeks' intervals and generally four to six treatments given.

The treatment of prostatism with radium or x-rays is, of course, complicated with the treatment of the general condition, and it is most necessary to look after the patient. Indeed, this is one of the things that is very important in x-ray and radium treatments of all conditions. If a patient has lost a great deal of blood, if he is prostrated, and radiation treatments are applied violently, we are going to depress that patient's vitality to such an extent that the patient cannot fight his own disease, and we must have the help of the patient's organism in attacking whatever may ail him.

It is a great pleasure to have listened to both of these papers.

Dr. R. T. Ferguson, Charlotte: I was very much interested in Dr. Phillips' paper. I have had the pleasure of referring a few cases to him myself. I think in these cases of hemorrhage of the uterus there is nothing in the world to compare with x-ray or radium treatment. Personally I prefer the x-ray treatment. I don't believe we know enough about radium yet to handle it too freely.

We see cases of hemorrhage from the uterus where we can't do anything for them at all, can't find any cause for the hemorrhage. We hate to remove the uterus, and personally I don't want to remove the uterus in any case where that can be avoided. If you remove all of the pelvic support the patient never feels the same again.

If we can have a case cured by the use of radium or x-ray, it is a great mistake if we don't do that instead of resorting to an operation. So in these cases where you can find no cause for the hemorrhage, always send them for x-ray treatment.

I have had some very excellent results from some of my cases, and feel that I have done the woman lots more good by having her treated with radium or x-ray than by removing all of the pelvic support.

Dr. A. J. Crowell, Charlotte: Like Dr. Ferguson, I am more and more impressed with the advantage of x-ray over radium in cases where either is indicated. We formerly used radium much more in

our malignant prostates than we do today. In fact, we seldom turn over a case to Dr. Phillips and say to him, "Use radium in this case." We use deep therapy instead.

We think, really, it is much better to use deep x-ray therapy to destroy all the embryonic cells possible in our malignant prostates, then remove the gland to get rid of the urinary obstruction, and follow the operation with x-ray treatments.

We like the x-ray before operation for two reasons: First, the destruction of as many of the malignant cells as possible; and second to block off the lymphatics and make the spread of the remaining cells to other tissue less liable during and following operation.

I doubt very much that even the most powerful deep therapy machines are sufficient to destroy the old malignant cells. Therefore it is well, after destroying all you can by the application of a wide field of radiation, to remove the gland and get rid of the obstructive symptoms.

About 18 or 20 per cent—I think Dr. Todd claims about 18 per cent of the cases at our clinic—operated upon are malignant. We feel sure that our malignant cases get along much better if we first x-ray them and then remove the gland.

We have had but little experience in the destruction or disintegration of the adenomatous gland by deep therapy. Dr. Phillips has tried it out in a number of cases. In some he thinks he has gotten quite excellent results, but none of them have been perfect, if I quote him correctly.

We do have perfect results in the adenomatous glands in the great majority of cases when the gland is removed. This can be done under sacral anesthesia without shock to the patient or undue pain, and very frequently it is not necessary to give a hypodermic following the operation.

We are all very much interested in the report coming from the Mayo Clinic that the greatest number of fatalities following prostatectomy were those following spinal anesthesia; second, the general anesthetic; and third, and least, following sacral and parasacral anesthesia.

We have done in the neighborhood of 150 prostatectomies under sacral anesthesia, with one fatality, and that one was not due to the sacral anesthesia.

Dr. A. T. Pritchard, Asheville: Just why it is that, in some of these cases of uterine bleeding, the x-ray will stop the bleeding and radium will not, and why it is that in other cases radium will stop the bleeding and x-ray will not, I have been entirely unable to explain, but we have had some of those cases.

There is one type of case that neither x-ray nor radium affects very much. I refer to cases of uterine polypus. You might say you ought to make this diagnosis by curettement. Curettement is a very blind, uncertain operation, one of the most so that is ever done, and in doing your curettement you will often overlook it. We have had about three cases within the past two years where

both x-ray and radium failed, and at operation we found that the cause was uterine polypus. I don't know why x-ray and radium don't seem to affect them, but in some cases they have both failed. We had one such case last week.

Dr. Phillips, closing the discussion: I didn't intend to leave Dr. Strong with as many tumors as he inferred I meant to leave him, although he can have all the tubes he can find. Our star patient was a colored woman, near fifty years of age, with a tumor. I didn't see the tumor, but she evidently had one of the largest tumors that any of us had seen. She looked like a pregnant woman, like a woman who was going to have twins or triplets. I see this old colored woman occasionally now, and you could not tell that she has ever had a tumor.

As to the use of the radium, we have found that the patients have a more stormy time than those in whom the menopause is brought on gradually by a few doses of x-ray. We give the x-ray treatment at two-week intervals. It takes from two to five treatments, and in occasional cases as many as six treatments. The older women get away with fewer treatments than the younger women.

If it is desirable to produce menopause at one sitting, it can be done with x-ray as well as with radium.

When we spoke of deep therapy we considered anything deep therapy that we treat with x-ray which is beneath the body surface. Deep therapy has a very wide latitude. We call anything deep therapy from a seven-inch spark gap up to 200,000 volts or 250,000 volts.

At the present time we are treating these cases of uterine bleeding with a deep therapy machine, delivering four million amperes to the tube at 200,000 volts. We give these patients, depending upon the depth we have to penetrate to reach the ovaries and the uterus, from 20 to 30 minutes of each treatment, 200,000 volts, four milliamperes, 20 inch, .48 millimeter copper, one millimeter aluminum.

The doctor mentioned some cases of polypus. That may have been the trouble with the woman 35 years old that I reported.

Dr. Crowell came nearer letting this discussion degenerate into the treatment of malignancy than anyone else. While I didn't say anything about malignancy in my paper, I should like to make a few remarks upon the treatment of malignancy along the lines he spoke of. He mentioned the fact that we like to give these malignant cases that were operable x-ray or radium before operation, in an effort to destroy the younger cancer cells, in an effort to block the lymphatics. Then, if it is an operable case—and when I say "operable case" I mean a well localized case, not one after it has metastasized—we do the operation, get out all the tumor, if possible, and then give radiation following the treatment to take care of any malignant cells that may be left in the field of operation, or to take care of any that might have been there that we couldn't make a diagnosis of, either before or at the operation.

Now if x-ray or radium is any good in the hopelessly inoperable cases of malignancy, then I think all of you agree that it must be—and I think all of you feel that it is—of more benefit in the early cases. We have taken the hopeless cases, cases that we knew we were not going to cure, and have told some member of the family, and sometimes were forced to tell the patients that we couldn't cure them, but that we could benefit them. In a number of cases we do benefit, we relieve the pain, we get rid of the foul discharges, make the patient comfortable, and some of them go on and live for two years and more in comfort up until just a few months before the end, when some of them suffer great pain. I think it is much better to relieve those patients and let them get a metastasis to some vital organ and pass out quickly with that, with pain lasting only a short time, than it is to let them drag along.

If we have been able to benefit those hopeless cases of malignancy that much, it must have greater value in the early case than in these hopeless ones.

It has not been my privilege to have many cases of early malignancy referred to me, and the few that were referred had some physical contra-indication to anesthetics and surgery. In those cases I feel we have done remarkably well. We have three cases like that living today, and so far as they know they are well. So far as we can determine they are well. They are living and happy —have been living for three years.

Dr. Crowell mentioned that we may not destroy the old cancer cells with x-ray and radium. I don't think we do. It has been positively proven that the mature cancer cells will live a long time after the radium has been applied. What we do feel we are accomplishing is to cause, by applying the radium to these cases, a large amount of sloughing, consequently a large amount of scar tissue, which walls off these mature malignant cells so that they remain quiescent for at least a short period, some of them for a longer period.

We have not had very much experience in treating the adenomatous and enlarged prostate. We treated a few cases, some of them with good results, some medium, some not good. I feel in those cases, from what experience we have had, unless there is some other physical contra-indication to surgery we do get better results, more nearly perfect results, more lasting results from surgery. (Applause.))

Dr. Bass, Chairman, closing the discussion: While my paper has not been discussed much, it has not been written on this end of the prostatic treatment. Of course we have no desire to take the surgeon's job away from him. The type of case I have been radiating has been the inoperable, feeble, cardiorenal condition, as you might put it, that was too much of a surgical risk to justify the procedure.

I have not yet any series of cases to report. I have around 30 in the process of treatment. You cannot report a cure until you get a cure, but the results so far have been worth the effort.

I noticed in the report from the Mayo Clinic that Bumpass reported over 200 cases treated with radium for prostatic hypertrophy. He, as Dr. Phillips says, had varied successes with the treatment; some were cured, some were benefited, and some were not influenced by the treatment.

I have had cases that I had to operate on afterwards. Of course, with cases of stone in the bladder and other complications, you would not attempt either radium or x-ray until you removed that condition. In those cases I go on and do a prostatectomy; but with the type of cases that are true adenomata, my results so far have been worth while.

It is a miserable fix for a human being to be in with an enlarged prostate. There is no condition that requires so much preliminary and after treatment as a prostatic. My results may be from the medical side of the treatment as much as from the radium.

Bumpass used short periods of radiation cross-fire. He did not use the longer periods of radiation. I have compared the two, and I think my results have justified the longer periods of radiation rather than the shorter.

Perhaps next year I can tell you how these old men are getting on, if any of them are left with me.

Dr. Phillips: May I rise to ask one question about your paper? I would like to know what amount of radium you use, and what length of time your application covers?

Dr. Bass: I generally run about 1200 milligram hours. I generally use 50 milligrams, getting my needles located in the prostate, as I told you, with a finger in the rectum as a guide and a sound in the urethra. I don't want to puncture the urethra. I don't want to get outside of my gland. I locate these needles so as to surround the urethra as near as possible.

In using the trocar, which is a regular standard process of treatment, I use ten milligram needles, and I try to locate them to surround or get cross-fire through the gland in all directions, as nearly as I can.

Of course, over-radiation will lead to degeneration and sloughing if you go beyond the period of endurance of tissue. The dose of radium is based upon the resistance of tissue. In other words, the normal tissue cells will stand more radium than a new growth. It is this border line that we radiate. In other words, a cancerous cell will be destroyed sooner, it is more susceptible to the rays of radium and x-ray, than a normal tissue cell. On this border line we use our dosage of radium. Of course there is nothing but standard work as to that part. I always like to give the tissue all it will stand at one short shot, unless the old man is so weakened that he can't stand it. Then I would rather radiate at shorter periods, giving time to react and keep up the treatments.

This is about the method that I follow in the work.

APPENDICITIS IN CHILDREN WITH SPECIAL REFERENCE TO DRAINAGE

Byrd Charles Willis, M. D., F. A. C. S.
Rocky Mount

The subject of appendicitis should and will continue to occupy the attention of the profession until, owing to prompt diagnosis, ruptured, abscessed cases with peritonitis and their entailed mortality are no longer seen. This state of perfection cannot be attained until the profession has informed and impressed upon the laity the necessity of calling them early in cases of acute abdominal pain, and then we must do our part by making a thorough physical examination and taking a careful history before prescribing. We cannot vacinnate against the disease, which will always continue to occur unless a religious rite or compulsory law is established for the removal of the appendix at a tender age, and then it would be necessary to adopt the Jewish seven days for circumcision, for Abt, in 1917, collected from the literature 80 cases in infants under two years, twenty of these cases being under three months.

My associate, Dr. Boice, and I have operated upon 1,181 cases of appendicitis in Park View Hospital, from July 1, 1914, to April 1, 1925, with a mortality of 27—2.28 per cent. One hundred and ninety-one of our cases, 16.2 per cent, were children 14 years and under. The total of 1,181 does not include appendices operated upon secondarily to some other operation. Our youngest patient was age three, and the oldest, 74. Of the 191 cases operated in children, five died, giving an operative mortality of 2.6 per cent. In addition to these, one case entered the hospital moribund and died four hours later without operation.

We have classified our cases as follows:

		Deaths
Chronic or recurrent	26	0
Sub-acute	13	0
Acute non-perforative	74	0
Acute, gangrenous, perforative appendicitis with or without definite abscess formation necessitating drainage	77	4
Acute perforative appendicitis with general diffuse peritonitis	1	1

We feel unable to say that we have ever operated upon a case of general peritonitis that recovered. We are able to put only one questionable case in this classification, and that one died. That case had a thinly walled off abscess at the head of the cecum and another in the pelvis, both abscesses containing a large amount of thin, watery, foul-smelling pus. We believe that the walls of these cavities broke down following the removal of fluid and that peristalsis spread the infection. Necropsy showed several small abscesses on the left side and numerous intestinal adhesions.

How can a surgeon be sure that a patient has a general peritonitis when he explores only a small operative area of the abdominal contents? It would certainly be poor surgery to explore the whole abdominal cavity. General peritonitis, in our opinion, is one of the gravest, most desperate conditions met in surgery, with an exceedingly high mortality rate. Many cases, on opening the abdomen, have a large quantity of thick, odorless lymph, with some localized injection of the intestines, and on locating the appendix abscess it will be well walled off, containing foul-smelling pus—this case will require drainage, not on account of general peritonitis, but because of localized pus. The same type and amount of lymph can likewise be encountered in a very acute unruptured appendix and require no drainage. We think some of these cases are classified under general peritonitis by some operators. We have not carried them in that classification in our series, for we do not consider them as such. To do so makes one's statistics look very fine, and seems to justify, perhaps, a high mortality rate.

In our 191 cases, 164 were white and 27 colored. There were 92 females and 99 males. The highest temperature was 104 F., lowest, 96. The highest pulse rate 160, lowest 72. The longest period of sickness before hospitalization was 14 days, the shortest four hours. Sixty-seven histories recorded that purgatives had been administered one or more times. Of the five that died, two had record of purges. Eighty-two histories recorded previous attacks. The highest leukocyte count was 39,800, lowest 6,200. The longest time in the hospital was 36 days, the least 7. The patient that was confined in the hospital 36 days had a complicating pulmonary abscess but survived after a very stormy convalescence. The number of cases drained was 78. In 14 of these the appendix was not removed, as it could not be found readily, and it was thought better not to disturb the walls of the large abscess. Four of the drainage cases, with removal of the appendix, died, and one of the drainage cases, when the appendix was not removed, died. Seventy-four were operated upon for acute appendicitis but were not drained, as the appendix was not ruptured. Combining the number of acute and acute perforative cases, we have operated on 152 with five deaths, a mortality of 3.3 per cent. Muller and Ravidin report 58 cases operated with 54 recoveries and 4 deaths, 6.8 per cent mortality. Simpson reports 34 cases operated with 29 recoveries and 5 deaths, 14.7 per cent mortality. Mitchell reports 40 cases with a 25 per cent mortality. Motley reports 37 cases with 2 deaths, 5.4 per cent mortality. Gray and Mitchell report 200 cases, 126 of which were acute, with a mortality of 15 per cent. Dowd, in 1905, reported 70 cases, with a mortality of 10 per cent; in 1907 he reported 50 cases, with a mortality of 8 per cent, and in 1910 he reported 61 cases without a death. Alexander reports 500 cases of acute and chronic appendicitis, with a mortality of 3 per cent.

The diagnosis of appendicitis in children is generally conceded to be more difficult than in adults, for they are more apt to be

frightened, and are less accurate in their description of pain. The symptoms, nausea, vomiting, and abdominal pain, are common to many other diseases of childhood. One of the most characteristic of clinical findings is the high leukocyte count. In the ruptured cases we found the average to be 22,890; in the unruptured, 16,930. The latter figure is in close accord with the Muller and Ravidin series, 16,920, and with Motley's 17,400 per cubic millimeter. Their cases were not divided into ruptured and unruptured classes. True rigidity is a very important finding, and Roysing's sign is of great value. Careful chest examination should be made in all children, as pneumonia causes a high leukocyte count and abdominal pain in many cases. There is also apt to be confusion in right-sided pyelitis, which has a lower leukocyte count and a high temperature, as a rule.

We have operated upon all acute cases of appendicitis as soon as diagnosis could be made unless there was some chest or extreme kidney condition. The McBurney incision has been used almost exclusively, 185 times. If it is a ruptured case we begin hypodermoclysis during the operation, trying to inject 1500 to 2000 c.c. normal saline as rapidly as the patient will take it. We feel that this has been of great importance in keeping down our mortality, as many of the cases were badly dehydrated and very toxic. We used for drainage two or three pieces of soft, collapsible, tubular, one-inch rubber tissue. If there is likely to be drainage into the pelvis we carry one or two pieces to its bottom along the pelvic wall, placing a short piece near the appendix base. We carbolize and alcohol, purse-string and bury the appendix stump in practically every case. We have had only one persistent fecal fistula, and in that case a round worm worked out along the drainage. We are aware of only one post-operative hernia. The wound is closed on the proximal side of the drainage, so as to bring it out against the lateral abdominal wall and not through the abdomen, as would be the case in a right rectus incision unless stab drain in flank was used. We do not use stiff rubber tube, glass or gauze drainage, fearing the possibility of pressure necrosis from the first two, and the formation of filmy adhesions in the gauze, blocking drainage, in the last. The simple rubber tissue slips out very easily at the end of the fifth or sixth day. We begin to shorten this on the fourth day and remove it on the seventh. The wound is not closed so tightly as to prevent drainage, but is made snug enough to pucker the rubber tissue and allow spaces in its folds. We have never seen accumulations remain in the abdominal cavity when the drain has been carried to the abscess pockets. We use morphia freely, stop everything by mouth for twelve to twenty-four hours, and give soda and glucose solution per rectum. In cases where there is infection in the pelvis, we prop the patient up and turn on the right side; if it is confined to the right iliac fossa about the head of the cecum we turn to the right side but do not elevate the head of the bed.

CONCLUSIONS

1. Operative interference should be immediately instituted on making diagnosis unless some serious complication is present.

2. When in doubt—do not drain.

3. Subcutaneous or intravenous introduction of fluids should be done during operation.

DISCUSSION

Dr. S. O. Black, Spartanburg, S. C.: Mr. Chairman, I thank you very much for the opportunity of saying a word about drainage.

The doctor said he had one hernia in 191 cases of drainage. I don't know how many cases of appendicitis we have operated on, but, for some reason or other, I am rather inclined to think that we are getting a greater percentage of post operative hernia.

I go around once in a while to a medical meeting and I hear a surgeon say he does not drain this case and he does not drain that case, that the peritoneum has wonderful powers of recuperation or warding off inflammatory processes, but when I go home and operate on a case of pus appendix or fulminating appendix, shaped like a baseball bat, the tip considerably enlarged and tense and tight, with free fluid in the fossae or in the pelvis, I haven't the nerve not to drain it. I would rather have a live patient with a post-operative hernia than I would a dead patient without a hernia.

I don't know whether our cases of appendicitis are different from the cases of appendicitis that these men get that they don't drain, but I sleep better at night with small tubes in somebody's belly, in the presence of a fulminating condition than I do if I close that up tight without a drain, and go to bed. (Applause.)

Dr. H. A. Royster, Raleigh: I am very glad to see that Dr. Willis has come around on the subject of drainage. He is perfectly right. When in doubt, don't drain. Why? Because those cases that you are in doubt about don't need draining. Anybody knows that with a belly full of pus you must drain. You know when you have an acute peritonitis you must drain. But what do you do with those cases about which you are in doubt? Are you tempted to slip in a little drain and say, "Well, I shall sleep better tonight"?

Dr. Black: You don't believe that, Dr. Royster! (Laughter.)

Dr. Royster: I do, absolutely. All my life I have been taken too seriously. However, I do believe, when in doubt, don't drain. I will tell Dr. Black the same thing. I can stand by his operating table and I will know exactly when he is in doubt and when he is not in doubt.

The trouble about these men who drain frequently is that they drain both when they are in doubt and when they are not in doubt. In other words, if there is any possible reason to drain they will do it. Dr. Willis had only 78 cases of drainage out of 191 acute appendicitis cases in children.

The other day I saw an acute gangrenous appendix with clear fluid in the abdomen, no odor. The man doing the work said, "I am afraid that serum might contain a few organisms, so I will put in a drain." Was he right or was he wrong? I can show case after case of this sort without any drain that have gotten well, and there is not the possibility of obstruction which comes from the drain.

Nothing succeeds like success. The cases that I see that die all have drainage tubes in them. That is a specious argument, I admit, because the man who put the drainage tube in put it in because he didn't want the patient to die. There was a lot of pus in the cavity, and the patients might have died anyway. When you see one of them closed with even a little pus in the belly and the patient does not die, what do you do about that one? Do you say you ought to drain or ought not to drain?

Then economy has something to do with it. There have been three great epochs in surgery. All of them were connected with economics. We used to operate to save life; the patients were desperate, but the call came late. Then we operated to save health, to restore the patient to the natural state. Now we are operating to save time, to conserve the patient's economic situation so that he will be restored promptly to his work.

I admit it is a very scientific and a very conscientious problem to determine when you will drain. However, I still reverse the dictum which was taught originally. When in doubt, don't drain, because, I repeat, you never are in doubt about cases that need drainage. You are sometimes in doubt about those that don't need drainage.

Now there are three particular aspects of appendicitis in children. One is that the cases are more acute, rupture early, and are more difficult to diagnose than in the adult. I think you will agree with me on that. We have seen cases that were supposed to be so-called acidosis that were nothing in the world but acute cases of appendicitis. After being worked over for a day or so we go in and find a ruptured appendix. We find others in which four or five or six hours after the initial pain the appendix is ruptured. That is not so often the case in adults.

The second peculiarity in children is that the cases which show pus in the abdomen are more apt in children to have accumulations or pockets somewhere else—left side, or up above under the liver or diaphragm. In children the peritoneal currents are stronger and there is apt to be a metastatic flow away from the original point, and the posture recommended by Dr. Willis, on the right side, is particularly useful in children.

Then I think we are apt in children to be led away from the diagnosis of appendicitis in order to save an operation, because there is a feeling that the child won't stand operation as well as an adult. My experience is just the reverse—that children have a great deal more resistance toward operating interference than the average adult, even in the very severe cases. The mortality among

children is not high because the child hasn't resistance, but because most of the cases are seen too late. (Applause.)

Dr. C. C. Phillips, Charlotte: I shall not discuss this from the standpoint of a surgeon, because I am not one.

Dr. Royster just mentioned that appendicitis in children was difficult to diagnose and that a number of cases of so-called cyclic vomiting, acidosis, was probably appendicitis. I feel that here the x-ray examination is of great aid in the diagnosis. The appendix will fill in almost every child that is normal. We have seen a number of these children with cyclic vomiting, periodic attacks of vomiting, pain in the abdomen. Then we have made an examination of the stomach and the intestines. In a large number of these cases we find that the appendix does not fill. We also find that there is delay in emptying of the cecum. In some of these cases it has been found at operation that they have some adhesions of the appendix to the cecum, which is probably the cause of the cecum's not emptying.

The conclusion that we arrive at in those cases is that the disease has not set up a reflex spasm in the appendix which has caused it to retain after all other parts of the colon have emptied. I feel that the x-ray is a very great help in diagnosis of this condition.

Dr. C. I. Allen, Wadesboro: I have been very much interested in the discussion of drainage, but I would like to say that in practically all of the cases of appendicitis in children that I have operated, drainage has been necessary. I rarely see a case in a child but the appendix has ruptured and there is abscess formation or spreading peritonitis. As Dr. Black has said, the cases must be different in his state, and I am right on the South Carolina border.

It has been my custom to use soft rubber tubing, as I have felt that the muscles pressing on it would prevent rubber tissue from being satisfactory as a drain.

There is one other thing, a mistake that I have made in diagnosing appendicitis in young girls and young women that I would like to call to your attention. I have had within the past two years six cases occurring in young females from 16 to 24 years of age, who came to the hospital with all the symptoms and signs of acute appendicitis. Severe abdominal pain, general at first but later localizing more to the right side, marked rigidity, most of the cases had either vomited or had been nauseated, slight temperature, and leukocytosis. At operation on the first of these I was much surprised when I brought into view what seemed to be a practically normal appendix. In palpating the ovaries in this case, which felt perfectly normal, I noticed more blood around the intestines than it seemed might have gotten in from the incision. When the ovary was brought into view I found that there was a ruptured corpus luteum cyst or follicle that had been bleeding into the abdomen. Since that time, whenever I have operated for appendicitis in a young female

in which the condition of the appendix did not justify the clinical signs, I have brought the ovary into view, and, as I have said, I have had six cases in which this was the trouble.

The only thing I have done for this has been to take a stitch or two to stop the bleeding. They have all made good recoveries, but two of the patients have had subsequent attacks of abdominal pain, which I have thought might be the rupture of another follicle.

As to the diagnosis of the condition before operation, the things that make me suspicious are that the patient does not look as sick as the physical signs of rigidity and the pain complained of would indicate, and the leucocyte count is always high, rather more so than in appendicitis. I do not know of any condition that will give as quick and high leukocytosis as blood in the abdomen. One other thing, the temperature in my cases has been around 99 to 100, which is not quite as much as I should expect in acute appendicitis with the tenderness and rigidity that these cases had. There has been no definite relationship between the onset of this condition, in my cases, and the menstrual period. The thing I should like to impress is, in operating for appendicitis in young females in which the appendix does not show enough trouble to account for the clinical signs and symptoms, look for free blood in the abdomen around the intestines in the pelvic region, and bring the ovary into view, as you cannot tell by palpation whether it is bleeding or not.

As to chronic appendicitis, the only thing that worries me is meeting these patients after operation, because they always tell me that they have the same symptoms they had before.

Dr. Willis, closing the discussion: Seventy-eight cases were drained. My acute cases were 152. There were 13 sub-acute, and 26 that I called chronic. I suppose a good many of them had had some disturbance and the parents were fearful of further trouble. Of course, like the rest of them, I think I have had a few of these so-called chronics that are still chronic.

I can't agree with the doctor from Wadesboro that all of his cases need draining. It may be that some of his cases were in that class I tried to bring out, that have a lot of serum, that looks milky, like the real thing almost, but culturally that will be negative.

The appendix may be wrapped up, that same type of case he has described, and you amputate it and take the appendix out and do not put a drain in. I sleep perfectly comfortably that way, and the patient does, too. Later, after the operation, you unwrap it and find the appendix is bursted. He did not have peritonitis; he had an irritated condition of the peritoneum.

If there is pus in there, there is nothing to do but drain. In those cases that have a lot of free fluid, cloudy lymph, where there is a gangrenous spot in the appendix, it may have a little odor to it, but that does not mean drainage. It is natural pus. I think that is the way you feel about it, Dr. Royster?

Dr. Royster: Yes.

Dr. Willis: I had 74 that I did not drain and 78 that I did drain. I consider that a very high percentage of drainage. Some of those I drained I might have refrained from draining.

With reference to the type of drainage: I am opposed to a stiff tube of any kind ever being put in an abdomen that I have anything to do with. I know of two cases in which a glass tube was used which caused obstruction and the death of the patients. They were operated upon by very skilful surgeons. That was some years ago. I made a mental reservation then, in the postmortem room, that I would never put in any stiff drainage, and I never have yet.

Rubber or glass tubing is stiff. You get just as good and much safer and better drainage with this rubber tissue tube. Put in two or three pieces and then just bring the wound snug around it, just enough not to mash the drainage together, just loosely. I don't mean now to leave enough opening for pieces of small intestine to come up alongside this drainage. That can occur and has occurred, but not in my practice, I am glad to say. Always put your finger down and see that you are not leaving too much space.

I appreciate the discussion. (Applause.)

SOME POINTS IN THE DIFFERENTIAL DIAGNOSIS OF ABDOMINAL CONDITIONS

John P. Kennedy, M. D., Charlotte

At a recent medical meeting in Milwaukee I attended some sixteen diagnostic clinics or lectures that had to do with abdominal lesions, and the thing that seemed to me to be dominant in the lectures was that abdominal conditions can be largely diagnosed by means of full histories, careful physical examinations, and logical deductions therefrom. At a time in the surgical era when exploratory laparotomy is so safe for the patient and so easy for the surgeon, it seems that there is a real temptation to advise exploration before adequate investigation has been carried out. Dr. John H. Gibbon refers in this connection to the old doctor who, when he did not know what was the matter with his patient, threw him into a fit, knowing he could cure him then, as he was "hell on fits," and says the doctor is in danger of becoming "hell on operations." There is also an added danger in this age that we shall get to depend so much on laboratory and x-ray aids that we shall neglect to cultivate and use our senses. This was well brought out by Dr. Henry A. Christian in his recent clinic held in the Presbyterian Hospital, when he said that the blood examination was the least important aid in the diagnosis of pernicious anemia.

In recording the history of abdominal complaints, the chief complaint should be in the patient's own words, as he usually states quite definitely the thing from which he desires relief. I have seen patients operated upon successfully, so far as finding and removing real pathology is concerned, and still not relieved of their complaint, because it was overlooked after finding some other trouble. It is

well to remember that patients may be afflicted with more than one diseased condition giving rise to their symptoms. Often patients themselves do not know their own history, and it is necessary to go over it with them more than once. Sometimes in the excitement of being examined, or on account of the dread of an operation, I find patients will leave out important parts in the history, which they recall when lying quietly in bed after an operation. It used to be a source of considerable embarrassment to me as an intern to get what I considered a complete history from my patient, only to have him tell the chief a different story the next day, or add something of importance. This was well exemplified in the man with a large mass in the upper right abdomen who told Dr. Christian about his hematuria only after he had asked about it, and had failed to tell his family physician and his hospital physician because they had failed to ask about that particular symptom.

Pain is probably the most frequent and most important symptom in the abdomen, and, in obtaining the history of pain, it is very helpful to get a complete description from the patient of the character, the exact location, the intensity of the pain, and what was necessary for its relief. In trying to locate the source of the pain, it is necessary to remember that it may not originate in the abdomen but may be referred: as witness the frequency of pain in the abdomen associated with pleurisy, angina, tabes, herpes zoster, spondylitis, and, especially in children, coxitis. When the pain originates from some diseased condition within the abdomen, it may be associated, according to Dr. Wm. Goldie of Toronto, Canada, with one of four conditions: muscle spasms, peritonitis, infiltration of tissue, and distended hollow organs. You will readily see that the character of pain will point toward and away from certain of these conditions. For example, pain associated with muscle spasm is an interrupted, rather than a continuous pain. This was beautifully illustrated in a young man presented by Dr. Goldie, who gave a typical ulcer history of many months' duration, but in which the pain for the past six days had been constant and radiated through to his back. The periodic pain was due to muscle spasm, but this constant pain was due to infiltration of tissues as result of slow perforation on the posterior wall. This diagnosis was confirmed by the x-ray.

When confronted with an abdominal tumor, Dr. Francis H. Lahey, of Boston, says that we should think of four pathological conditions which may give rise thereto, namely: inflammation, new growth, congenital defect, and trauma. Having placed these in your mind, take up one by one the organs that are or may be found in that particular part of the abdomen and make the diagnosis by exclusion. For example: swelling in the upper left abdomen might be kidney, spleen, colon, tail of the pancreas, or retroperitoneal glands. Is this tumor an inflamed kidney, a new growth in the kidney, as hypernephroma, or a congenital cystic kidney? What findings in the case are in favor of or against this diagnosis? What symptoms should be presented to make such a diagnosis which are

not present in this case? The most important thing in diagnosing any given condition is first of all to bring up that condition for consideration.

So much for generalization of abdominal pain and abdominal tumors. I now desire to take up some isolated points in the diagnosis of the diseases of certain abdominal organs.

In peptic ulcer the pain is periodic, has always the same intensity, has a definite time relation as to meals, and is relieved by food. If, however, there is a slow perforation with infiltration of the tissue, the pain then becomes constant, as in the case of the young man referred to above. Ulcer symptoms may be mimicked very closely by referred symptoms due to spasm from chronic appendicitis or gall-bladder infection. It is helpful to remember that reflex symptoms rarely show the same periodicity or the same intensity as occur in ulcer cases. A very valuable point in this differentiation mentioned by Dr. Goldie is that in referred symptoms the history is different in the early stage from that in the later stages. Question the patient carefully as to the onset of his symptoms, and you will find that in ulcer cases the history is the same in the first month as it is at the present time, whereas if the symptoms are referred, you will find that the condition began as a mild dyspepsia, with slight discomfort after meals, or some belching of gas, and that only later did the present symptoms develop. As regards the differential diagnosis of ulcer and cancer, Dr. Crile says that the history is very suggestive. The history in cancer cases usually dates back less than a year whereas in ulcer cases it extends over a much longer period, as a rule. The number of ulcer cases developing into cancer is probably much smaller than was held by some authorities a few years back. If the patient improves on medical treatment, it is in all probability not cancer. Jejunal ulcer occurs in about 2 per cent of all gastro-enterostomies, usually comes on within one to three months after operation, and is to be thought of where the symptoms are not relieved or where they recur following operation. An almost diagnostic sign as noted at the Mayo Clinic is that, in describing the location of this pain, the patient takes his two index fingers and places them a little above and to each side of the umbilicus and runs them down several inches on either side of the mid-line. The pain is a little lower than his original pain and radiates down the mid-line.

As regards the diagnosis of gall-bladder infections, let me call your attention to bile pigments in the urine, which indicates functional deficiency of the liver. A still more delicate test is the presence of bile pigment in the blood serum as tested by means of Fouchet's reagent. This test may be positive when the urine is negative, and yet is not delicate enough to detect bile pigment unless it is present in pathological amount. In doubtful cases the presence or absence of bile pigment in the urine or in the blood is an added link in the diagnostic chain of evidence. Eighty-five per cent of gall-bladder cases can be diagnosed without the aid of tetra-

bromphenolphthalein, but it is indicated in the remaining fifteen per cent of cases. Dr. V. S. Counselor, of the Mayo Clinic, says in private that he hopes soon to be able to announce to the profession a salt which is non-toxic and which will visualize the gall-bladder. Pain in the back is not due to gall-bladder infection, but is due to the associated pancreatitis, according to Dr. C. H. Mayo. In the diagnosis of acute pancreatitis Moynihan calls attention to the value of Lowe's test, and, in three out of four cases reported by Waring and Griffiths, this test was positive. It consists in putting a few drops of adrenalin chloride in one eye, repeating after a few minutes and waiting from fifteen to thirty minutes. In cases of acute pancreatitis the pupil will dilate from the adrenalin. In a normal case there will be no change in the pupil.

As regards the differential diagnosis of inflammation above and below the diaphragm, a deep breath greatly increases the pain and pressure relieves the pain where the inflammation is above the diaphragm. The leukocyte count is much higher in inflammations above the diaphragm.

Dr. Walter L. Niles, of New York, called attention to congenital peritoneal bands as the cause of abdominal pain. This condition is often overlooked, but may be diagnosed more frequently if it is thought of. The symptoms produced are either reflex or toxic in nature. The pain is seldom severe, is relieved by vomiting and by enema, is often accompanied by headache, which comes on one to two hours after meals, when the stomach is full, and the x-ray shows a fishhook type of stomach. These bands are congenital in origin, occurring during the rotation of the bowel, and the majority never give rise to any symptoms. They should not be confused with acquired adhesions resulting from inflammation.

Sir Henry Gray, of Montreal, makes two tests which he considers a great aid in the diagnosis of chronic appendicitis. The first test is the presence of deep hyperesthesia over a chronically inflamed appendix, and is elicited by making firm pressure with a pin held with the point towards the patient's head, beginning just below the costal margin and drawing the pin down along the outer border of the right rectus muscle. Pain will be experienced when the pressure is almost over the appendix. You may then draw the pin in from the flank and also from the left side of the abdomen, and thus outline an area of deep hyperesthesia whose center corresponds approximately to McBurney's point. The second test is made as follows: With the finger locate a tender spot over the left rectus, usually one and one-half inches below and to the left of the umbilicus, corresponding to the ending of the eleventh thoracic nerve. Estimate the amount of pressure necessary to give pain here, and relax the pressure. With the back or flat palm of the hand make the same amount of pressure over McBurney's point, and maintain the pressure. Again make pressure with the finger on the tender spot on the left side, and find that the tenderness at this spot has disappeared. This sign indicates the presence of a Lane's kink or

else a chronically inflamed submesenteric appendix. I have not been able to confirm this sign in many cases. Dr. A. L. Soresi describes a helpful sign in the diagnosis of appendicitis. The patient lies with the thigh flexed and breathes deeply, while the surgeon places his hand over the upper right abdomen, gently works it up under the right costal margin, and maintains firm pressure. The patient is asked to cough, which in the presence of an inflamed appendix will give rise to pain around McBurney's point. This sign is explained by pressure on the cecum of gas in the colon, and by pressure from the rectus muscle, which pulls on its lower attachment when its upper part is held firmly fixed by the hand. The value of this indirect method of palpation is largely a psychic one; the patient expects pain under the palpating hand and therefore does not complain of any pain at McBurney's point unless the pain is really there.

Dr. John V. Barrow, of Los Angeles, called attention to the frequency of intestinal protozoa and to the variety of symptoms which they produce. In any patient with ill defined or complex symptomatology, it is well to think of and to rule out this condition. Especially is this true in those patients in middle life who have chronic abdominal complaints and associated hypertrophic arthritis of the smaller joints, such as the finger joints. In these patients an intestinal protozoon has been found which is thought to be the causative factor. A like organism has been found in the cervices of some women suffering with the same condition.

The presence of a serum rash, joint pains, and muscle soreness within a few hours following rupture of ovarian cyst should be helpful in the differential diagnosis of an otherwise baffling acute abdominal condition. In the case I have in mind, we did not suspect the cause of these symptoms until the abdomen was opened. The symptoms of serum absorption which this patient had, namely the rash, joint pains and muscle soreness, in the presence of acute abdominal symptoms, should lead one to suspect blood or serum in the abdominal cavity.

It is important to differentiate between the different causes of gas pains, especially those following operations. In some, this pain is due to hyperperistalsis, while in others the reverse condition is present. This differentiation may be made in a few seconds with the ear or the stethoscope to the abdomen, as in the former condition there is marked gurgling of gas and liquids in the intestines, whereas in the paretic condition there are no audible signs of peristalsis. This distinction is important in the treatment, as one condition required an antispasmodic and the other rest or possibly stimulation. Treatment which may benefit one may make the other worse. Thus the folly, as is done in some clinics, of giving eserin or other drugs routinely after laparotomy, without regard to the disturbed physiology.

The diagnosis of acute abdominal injuries is at times a difficult matter, and a most important one. Dr. George E. Brewer, of New

York, has recently called attention to these injuries and the high mortality incident to late diagnosis. It is at times very difficult to differentiate between symptoms due to local injury to the abdominal wall and those due to an injured viscus. Dr. Brewer's criterion for operation in these cases is associated pain, tenderness, and rigidity. The combination of these signs means visceral injury and calls for exploration before the signs of hemorrhage or peritonitis present themselves. The mistake of going in too late is made much more frequently than going in unnecessarily. In fact, I think the general statement may be made that in any acute abdominal condition caused by trauma or disease, where there is considerable doubt about going in, the patient should be given the benefit of the doubt by having the exploration. Contrariwise, in chronic cases where there exists the same amount of doubt about going in, I think the patient should be given the benefit of the doubt were he not to have the operation. The more painstaking the history, the more thorough the physical examination, the more logical the deductions therefrom, the less need of the exploratory laparotomy.

SUMMARY

Granting that a very large percentage of abdominal conditions may be diagnosed clinically, every such patient is a challenge to our ability to use our senses and to draw proper deductions rather than depend entirely, or even primarily, upon outside aid. Dr. W. W. Keen very graphically presents this truth in the following lines: "With all our varied instruments of precision, useful as they are, nothing can replace the watchful eye, the tactful finger, and the logical mind which correlates all these avenues of information, and so reaches an exact diagnosis."

A full and complete history is of primary importance in diagnosing abdominal complaints. This history should give the chief complaint in the patient's own words, and will usually have to be added to and filled in by careful questioning of particular symptoms in their chronological order. Such a history may require more than one sitting to obtain.

It is helpful to think of pain in the abdomen as being associated with one of four conditions: muscle spasm, peritonitis, infiltration of tissues, or distension of a hollow organ.

Confronted with an abdominal tumor, you should think of four pathological conditions which might give rise thereto, namely: inflammation, new growth, congenital defect, and trauma.

I have referred to some diagnostic points which are either new or are apt to be overlooked and are of importance in the following conditions: Gastric, duodenal and jejunal ulcer, gall-bladder infection, pancreatitis, inflammations above and below the diaphragm, peritoneal bands, chronic appendicitis, intestinal protozoa, ruptured ovarian cyst, and acute abdominal injuries.

In conclusion, I should like to emphasize the necessity, as Dr. Stuart McGuire says in regard to appendicitis, of wasting no time

in the diagnosis and treatment of acute abdominal conditions and of sparing no time in chronic abdominal conditions.

DISCUSSION

Dr. R. T. Ferguson, Charlotte: I have nothing to add to the doctor's paper, but I want to express my pleasure at having heard it. It is a most excellent paper and the kind of a paper that we all need. I want to thank him personally for it.

ETHYLENE—OXYGEN ANESTHESIA

R. L. Wall, B. S., M. D., Winston-Salem

It is indeed a wise surgeon who selects well his anesthetic and his anesthetist, for in most operations the anesthetic is a distinctly important factor. I believe that there is no one anesthetic that is indicated in all operations, for ether, chloroform, nitrous oxide, ethylene, spinal, regional and local, all have their places, and are needed in modern surgery. It is the man at the cone who bears the brunt of many surgical battles, and upon him to a certain extent depends the life of the patient, and the surgeon's success. Many of the victories of surgery would have been impossible but for that oblivion now so easily brought about, which makes all operations painless. But weapons of strength may work for good or evil, depending on the degree of intelligence and skill with which they are used. It is true with the surgeon's knife, and it is peculiarly applicable to the anesthetist.

My paper is on ethylene-oxygen anesthesia, the newest of them all, but I believe one of the best, being indicated in a great many operations. Ethylene is an unsaturated hydrocarbon gas (C_2H_4) and is found in nature as a constituent of coal gas. At ordinary temperatures and pressures it is a colorless gas having a sweetish taste, or, as one has described it, the odor of molasses. This gas has been used more or less pure, commercially, for several years, for welding, lighting, and heating.

Dr. Arnold B. Luckhardt, Professor of Physiology in the University of Chicago, and Dr. Carter, of the same university, were the first ones to use this gas. Its anesthetic properties were first observed by Knight and Crocker of the Hall Botanical Laboratory of the University of Chicago, in 1908. Their investigation was brought about in an attempt to discover the cause of great losses by carnation growers shipping these flowers into Chicago, who found when they were placed in greenhouses they would go to sleep. Their study of the effect of illuminating gas, of which ethylene forms about 4 per cent, on flowering carnations showed that ethylene was the chief constituent which determined the toxicity of gas for plants. One part of ethylene to two million parts of air caused the already open carnations to close and go to sleep on twelve hours exposure, whereas one part of ethylene to one million parts of air prevented the opening of buds already showing petals. As the result of these effects of ethylene on plants Dr. Luckhardt started his investigation

of the toxicity of ethylene on animals, and to him is due not only the discovery of ethylene as a gas anesthetic but the making of its use safe and possible through his experimental and clinical work.

In August, 1922, Luckhardt and Carter finished their long research of ethylene with laboratory animals, and in March, 1923, the first operations were performed on man with ethylene-oxygen as an anesthetic agent.

Later over 100 cases, on whom operations had been performed with the use of this gas, were reported from the Presbyterian Hospital of Chicago. Up to the present time this gas has been used extensively throughout the United States and Canada with most gratifying results. My personal experience with ethylene, since last October when I first began using the gas, consists of about 800 cases, ranging from the simple extraction of a tooth or opening of an abscess to the most difficult abdominal operations, in length of time from a few minutes to three hours, and in every case the results have been successful and far above my highest expectations.

I believe this anesthetic to be far superior to nitrous oxid, because it produces very rapidly the complete relaxation of ether anesthesia without causing cyanosis or rise of blood pressure or sweating—all of which are produced by nitrous oxid. As regards nausea and vomiting following the administration of nitrous oxid or ethylene, the results are about the same. If it occurs with ethylene at all, it is usually mild and of short duration. In many cases there has been no vomiting at all. I have also noticed that the appearance of patients under the influence of this gas is more like natural sleep, and, because of the greater quantity of oxygen that can be administered with ethylene, the patient always stays pink and occasionally almost a cherry red. Cynosis has been strikingly absent, and I don't believe it is ever necessary with ethylene. With nitrous oxid we invariably have to get the patient cyanotic at times to keep him under.

Premedication: Premedication with ethylene is very important The usual pre-operative routine is carried out, but with ethylene anesthesia morphin seems to be a distinct aid. I believe that at least a sixth to a quarter of a grain of morphin should be given three-quarters of an hour before operating. Gwathney recommends that we also use magnesium sulphate, which adds greatly to the effect of the morphin.

Induction: The induction with ethylene is easy and of great rapidity. There is almost entire absence of any struggling or excitement. The patient is asleep in from a few seconds to two or three minutes. I have had patients tell me that they lost consciousness after two or three breaths. In starting my patients I invariably give them a few whiffs of nitrous oxid to avoid the unpleasant odor of ethylene, although I have started patients directly on ethylene and they have not complained of its odor.

Almost without exception, while patients are asleep, they have pleasant dreams. I have had a number of patients say to me: "Why

did you wake me up so soon? You did not let me finish my dream. I was having a wonderful time." It is a peculiar thing that a majority of patients dream that they have been traveling in a very fast mode of conveyance, as an aeroplane, automobile, or even flying through the air themselves.

Breathing: The respirations are very slow and quiet, and resemble normal sleep. There has been no increase in the secretion of saliva or mucus, and not a single case of postoperative respiratory complication. I have given ethylene to patients with a bad coryza or bronchitis and in no case was the condition made worse.

Relaxation: Relaxation, in some cases has been as complete as with ether. In all cases it has proved satisfactory, for at no time have I had to give ether with my ethylene to aid in relaxation. In one instance the patient was a muscular man weighing 220 pounds, and his relaxation with ethylene-oxygen alone was very satisfactory to the surgeon. The abdominal operations with this gas have been both upper and lower abdominal, consisting of cesarean sections, cholecystectomies, gastro-enterostomies, appendectomies, prostatectomies, hysterectomies, and all forms of pelvic operations.

Absence of Sweating: Two very important factors in producing surgical shock are loss of body fluids and chilling. We are all familiar with the great amount of diaphoresis with ether and nitrous oxid anesthesia. This is almost entirely absent with ethylene and oxygen. The skin remains dry and warm, and I have given this anesthetic for two hours without the patient's perspiring at all.

Blood Pressure: There is no rise in blood pressure with ethylene, as we get in nitrous oxid anesthesia, therefore the former is much safer to use on patients with arteriosclerosis and hypertension. Due to this fact, we also get less oozing and hemorrhage during the operation.

Pulse: I have noted the pulse readings before, during, and at the close of this anesthesia, and in most cases the pulse drops after induction from 10 to 20 beats, approaching the rate the individual would have in ordinary sleep or complete rest.

After stopping the anesthetic the pulse rises again to the rate that it was at the beginning of the administration. The shock from this anesthetic is very little indeed, which I believe is one of the strong indications for its use as a general routine anesthetic.

Recovery: The rapidity with which patients recover from ethylene-oxygen anesthesia is quite striking. By recovery I mean from the time I stop the anesthetic until the patient recognizes people and can answer questions intelligently. I have found this space of time to be from one to three minutes, the length of the operation playing no important part in the time it takes for the patient to awake. The other day I gave an anesthetic for three hours, ethylene-oxygen, and the patient was awake in two minutes. The rapidity of recovery is so that lately the surgeons have requested me not to stop the anesthetic until they are ready to put on the dressings.

Safety: Luckhardt and Carter have shown that when ethylene gas is pushed to the limit in dogs the respiratory center fails, first, and at a time when the force and frequency of the heart are quite normal. Artificial respiration quickly restores the animal. There is also a wider range between the anesthesia point and the danger point with ethylene than with nitrous oxid, therefore we have a wider range with ethylene and the patients do not have to be watched quite so closely as they do with nitrous oxid.

In papers and discussions I heard at the meeting of anesthetists in New York City last fall, all the authorities agreed that there are no latent after-effects from ethylene and that the study of post-operative urinalysis, kidney function, blood counts, blood smears, hemogoblin determinations, etc., has shown no evidence whatsoever of any deleterious post-anesthetic changes, all of which make it, I believe, the best routine general anesthetic. In septic cases, in fact, in all cases, these are important points to remember. Ether produces a leukopenia, while ethylene does not interfere with phagocytosis. Nausea and vomiting, starvation, suppression of urine, and leucopenia often decide the fate of the patient, but with ethylene-oxygen the happy frame of mind, the giving of food immediately after the operation, the undisturbed phagocytic power of the blood, the increased flow of urine, the non-irritating effect on the bronchi and lungs, constitute a group of forces that are bound to work for the patient's good. Luckhardt states that ethylene has no demonstrable effect on the heart muscles directly, and only a slight stimulating effect, if any, on the cardio-inhibitory center; also that there are no contra-indications to its use in cases with valvular heart lesions and myocarditis; and, further, that on account of the absence of rise of blood pressure during ethylene anesthesia, it is safe in cases of hypertension and arteriosclerosis. Postoperative pneumonias are not caused directly by this anesthetic because this gas does not irritate the respiratory tract in any way.

Disadvantages: As to the disadvantages of ethylene, I know of but two. The first, though slight, is its unpleasant odor; this, however, is not complained of, and may be eliminated by giving a few whiffs of nitrous oxid before turning the ethylene into the breathing bag, as I have already stated elsewhere in this paper.

The explosibility of this gas is its greatest disadvantage, although I do not believe it is as highly explosive as at first supposed. In a discussion on this subject at the meeting of anesthetists in New York City last fall, such authorities as Gwathney, McKesson, Cotton, Buchannon, and others agreed that ethylene with oxygen is no more explosive than an oxygen-ether vapor. Notwithstanding the fact, we should be very cautious with the gas in this respect. A cautery should not be used, neither should a lighted flame be anywhere around when this anesthetic is administered. The few explosions caused by ethylene-oxygen, that I have investigated, have without exception been due to carelessness.

In conclusion, I feel that ethylene is the most nearly ideal routine general anesthetic known; that it produces anesthesia more nearly like that of normal sleep than any other anesthetic; that with its use we shall have fewer postoperative complications, and decrease to a great extent the customary postanesthetic discomforts. that with its use we can operate on patients who are very bad surgical risks and in whom operations with other anesthetics might prove serious or fatal.

DISCUSSION

Dr. Bass, Chairman: Gentlemen, you have heard Dr. Wall's paper. It is open for discussion.

Dr. Wall, may I ask you the question as to what is the hospital cost of this anesthetic as compared with ether?

Gentlemen, this is a very valuable paper, and this anesthetic is attracting some attention. It certainly does get around a whole lot of unpleasant symptoms from ether and other anesthetics that we have been using.

Dr. H. M. Eddleman, Gastonia: May I ask if the muscular relaxation is as complete with ethylene gas as with other anesthetics?

Dr. Wall, closing the discussion: I have given this anesthetic for all the surgeons in Winston-Salem, and they are all delighted with it.

As to the cost of ethylene, it costs us about $5 an hour to give the anesthetic.

As to relaxation, in almost all cases where you give them a hypodermic of morphin, say a quarter of a grain, you get as good relaxation as you want. As I said a while ago, I have had only five cases in which I had to give ether. Some of them are relaxed just as well as you would want a patient to be relaxed. Others are not quite so well relaxed and you sometimes have to give a little ether with the ethylene.

The time in most operations when you want relaxation is when you first go into the abdomen. Push your anesthetic while that is being done. Then when you start to sew up, as you all know, you want the patient well relaxed. Those are the two times you have to increase the ethylene a little to get the desired relaxation.

TETANUS

H. H. Purinton, M. D., Durham

Tetanus is a very distressing and formerly a very fatal disease; it was so fatal that Roswell Park, in 1896, made the statement that no case of acute tetanus which had come under his observation had ever recovered. Tetanus was formerly spoken of as traumatic, ideopathic, and tetanus neonatorum. Since those days it has been established that all cases of tetanus are traumatic, due to the introduction of the tetanus bacillus into the body through a wound, abrasion, burn, or some other broken surface.

Kitasato and Nicolaier, the most prominent investigators, in 1885 clearly established the parasitic nature of this disease, and isolated the organisms by which it is produced. It is caused by a bacterium which often grows in the intestines of horses. The bacilli are found in and about stables and in the soil of streets, and of cultivated fields. The longer soil has been under cultivation, the greater likelihood of its harboring germs. In some parts of the United States tetanus is a comparatively rare disease; but in other parts of the world, in the West Indies for example, it is of frequent occurrence. There the soil has been cultivated and fertilized summer and winter, for hundreds of years, and seems, in some localities, to be highly impregnated with tetanus germs. At one time, in Jamaica, it was estimated that one-fourth of the new-born negroes died from tetanus within eight hours after birth. It is no wonder that tetanus neonatorum was spoken of as a peculiar branch of the disease. But if one has lived in the West Indies, as I have, and has had a chance to observe the ignorant and filthy manner in which the native midwives conduct a case of childbirth, he will readily see how babies may be infected by them through the uncleanliness of their hands, the scissors with which they cut the cord, and the dirty rags with which they dress it. This observation is not far fetched; for a celebrated Belgian surgeon was unfortunate enough to lose by tetanus ten cases of major operations successively, before he suspected what was the cause; finally deciding that the trouble might be due to faulty sterilization of his instruments, he instituted measures to have them properly prepared, and the deaths from tetanus immediately ceased.

In the light of modern science we know that it is absolutely necessary for an individual to be infected with tetanus bacilli before he can have tetanus. When a person steps on a rusty nail, is injured by a toy pistol, by the explosion of fireworks, or in any other way, and soon after develops tetanus, it is not due to the particular kind of injury, but to the fact that tetanus germs have inoculated him, through being injured when his person was contaminated with dirt bearing the tetanus germs. Perhaps he had dirty hands or feet; or in some other way became vaccinated with the bacilli causing this disease.

The bacilli are anaërobic, but they can grow in wounds into which oxygen can penetrate, such as punctured wounds made by stepping on nails, or those made by fireworks. By some authorities it is claimed that tetanus germs do not multiply in the soil, but exist in the form of spores which are not easily killed. The bacillus of tetanus is a slender, rod-shaped organism, having a peculiar tendency to spore formation at one end, giving it the appearance of a drumstick. As I said before, this organism is an anaërobic one, and its growth in the laboratory must be in the depths of solid culture-medium, or in fluids, and on surfaces in an atmosphere of hydrogen gas. Park says: "It is one of the apparent contradictions of bacteriology that this organism, which can only be grown as an anaë-

robe, nevertheless abounds in earth, particularly the rich black loam which best supports luxuriant vegetable life, and that it particularly inhabits the upper layers of the soil, which accounts for the fact that so many contaminations and infections have occurred from stepping upon planks or boards with nails projecting; or from introduction of splinters; or from lacerations of hands or feet which so often follow from contact with such materials.

The incubation period is usually two to four days, but cases have been reported to occur six or eight weeks after infection. In laboratory investigations, incubation is seldom longer than forty-eight hours.

It is claimed by some that the colored race is more susceptible to this disease than the white, and that in hot countries it is much more prevalent than in cold; but it is my opinion, after having seen it in both races, that it is highly dangerous to become infected with tetanus germs, whether white or black. I believe the reasons for its being more prevalent in hot countries are more likely due to conditions not connected with temperature.

When one has become infected with tetanus, the toxin travels from the site of the infection through the nerves, and enters the nerve cells of the spinal cord, irritating them, and causing contractions of the muscles, and convulsions.

Symptoms: While the disease is nearly always of a very acute type, occasionally a chronic tetanus is met with. After an incubation period of three or four days, the first warning usually comes as stiffness of the cervical and maxilliary muscles. The patient often fancies he has a sore throat, because he has difficulty in swallowing. The stiffness of the muscles is followed by increasing tonic spasm of the muscles of the jaw, until it is impossible to open the mouth; the neck muscles become rigid, till the head is held in an immovable position. Other muscles become contracted and rigid, and may remain in this condition till death, should the disease terminate fatally. The muscles of the back may become contracted till the body is bent forward, constituting a condition called opisthotonos. Sometimes the flexor muscles of the thighs and those of the abdomen are especially involved, causing the body to be bent more or less forward, when the condition is known as emprosthotonos; and when the body is bent to one side or the other, it is known as pleurothotonos. The muscles of the mouth are peculiarly drawn, producing an effect known as risus sardonicus. If the disease terminates fatally, it is by asthenia, or spasm of the muscles of respiration.

Diagnosis: Diagnosis is to be made between strychnia poisoning, hydrophobia, tetany, hysteria, and, in the early stages, from pharyngitis and tonsillitis. In strychnia poisoning, the muscles of the jaw are the last to be affected; in tetanus among the first. In strychnia poisoning, there is hyperesthesia of the retina, and objects look green to the patient. In strychnia poisoning, the onset is sudden; in tetanus, gradual, and there is no foaming at the mouth. In

hydrophobia, there is usually a history of an accident, the patient is in a state of mental excitement, and the muscular spasms are usually limited to the muscles of respiration and deglutition; the excitement often runs into mania, the patient sometimes becoming so violent that restraint is necessary. In tetanus, the patient is quiet, and the mind remains clear to the end. The symptoms of hysteria are so contradictory and uncertain, with absence of any evidence of organic trouble that there is little chance of confounding the two diseases. Tetany is characterized by tonic spasm, particularly of the extremities. One authority says it is pathognomonic of tetany, that pressure over the great vascular or nerve trunks will bring on spasms; this is known as Trousseau's sign. Chevostek first described a peculiarity of tetany, in that a slight tap on the side of the face, at the point of emergence of the facial nerve from the parotid, usually brings on a spasm of that side of the face. Tetany follows operations on the thyroid; it is seen in nursing mothers; is met with in children who have been exposed to cold; sometimes it is seen after intestinal lesions produced by typhoid or parasites.

Treatment: In treating tetanus, we now have at our command the antitetanic serum; and it has come to be looked upon as our sheet anchor, just as diphtheria antitoxin is depended upon so strongly in diphtheria. This does not mean that the antispasmodics are not to be used; in my opinion they are very useful adjuncts, and should be used in large doses if the disease has gone on to the convulsive stage. Chloral, bromide, opium, cannabis indica, and curare have all been used to allay spasms. But if only one remedy could be used, it should be the antitetanic serum. As a preventive dose, 1000 to 1500 units of the tetanus antitoxin should be used, injecting it subcutaneously as soon as possible after a suspicious wound has occurred, and repeating in two weeks if the wound has not healed.

It is of great importance to treat the wound promptly, removing all dirt and foreign substances which contaminate it, and to sterilize it as nearly as possible.

Overton and Denno both recommend that the serum be injected intraspinously instead of subcutaneously or intravenously, as they claim it goes immediately to the nerve centers through the spinal canal, and reaches the toxin in the nerve cells much quicker than by other routes. They claim that if given intraspinously within a day or two after the first symptoms of tetanus appear, nearly all patients will recover.

If the disease develops, doses of from 3,000 to 20,000 units may be given. If the smaller doses are depended upon, of course they must be given oftener than when the larger doses are administered.

While acting as Government Surgeon at the Holburton Hospital, Antigua, British West Indies, a case of tetanus came under my care, presenting some phases which I think may be of interest, so I have made a report of it from the hospital records.

On the afternoon of May 2, 1924, George Lewis, a seaman, residing in Anguilla, was admitted to the Holburton Hospital. He

gave a history of having had a stiffness of the muscles of the back of the neck a day or two before leaving his home on a voyage to Dominica. Before the vessel reached Antigua, the stiffness of the neck muscles became worse; other muscles of the body began to grow stiff, and he had two spasms. He went ashore at Antigua, and was conveyed to the Holburton Hospital at once.

I was notified of the admission of this patient, and went to see him. On examination, I found his jaws so firmly set that he could open them only a mere crack. The muscles of the neck, back, and upper and lower limbs were in a state of constant contraction; at intervals he was having pronounced spasms. The muscles of the face were contracted all the time, producing a typical risus sardonicus. There was no attending fever. I diagnosed the trouble as tetanus. A search was made for some wound or abrasion through which the tetanus germs could have gained entrance to the body; none were found. On questioning the patient as to whether he knew of any wounds, great or small, which he had received recently, no further light was gained, except the statement that he had a cut tongue, caused by his teeth in one of the spasms he had been having before his entrance to the hospital. I discovered the patient had a very bad case of pyorrhea alveolaris, and thinking it barely possible that the tetanus germs might have found entrance through the diseased gums, I ordered the mouth cleansed with peroxide of hydrogen and a wash of bicarbonate of soda. A few days after the patient entered the hospital, one of the nurses discovered a very small jigger in the skin on the under side of one of his toes; this was removed and the place cleansed and treated with iodin. This possible focus of infection was so small that it was not at first discovered; I think it was found while a nurse was bathing the patient.

At my first visit to this case, in addition to ordering the cleansing of the mouth, I prescribed the injection of 3000 units of antitetanic serum and 20 grains of chloral hydrate. When I visited the hospital the next morning, the condition of the patient was much the same as on admission. I ordered 20 grains of chloral to be given every four hours, and the injection of 3000 units of the serum night and morning. On questioning the patient, I found he was constipated, and ordered 2 ounces of magnesium sulphate; this dose was repeated quite a number of times during the treatment of the case, and many times it was necessary to follow this with an enema.

I fancied the patient showed slight improvement each time the bowels were cleared out with the saline, and ordered this part of the treatment kept up, not only on general principles, but because I believed a certain amount of toxic material was eliminated in this way. On the fifth of May, the spasms and stiffness of the muscles continuing, with no abatement of the risus sardonicus, though the spasms were a little less frequent, I ordered 10 grains of bromide of potash to be given with the 20 grains of chloral still being given every four hours. No very great change having taken place on May 7th, the bromide was increased to 20 grains, the dose of chloral

remaining the same as at first. On May 8th I ordered 20 grains of chloral and 25 grains of bromide to be given every four hours. On May 11th, I ordered 25 grains of chloral and 25 grains of bromide given at the same intervals as in the past; these doses were continued till the morning of the 14th, when, the patient having shown some signs of improvement, the chloral was cut down one-half; one dose of this size was given, then no more thereafter. The dose of 25 grains of bromide every four hours was continued till the morning of May 21st, when only 12½ grains was given as a final dose. To go back: Up to May 13th, no very great improvement took place; place; the patient was having spasms as often as on admission; the muscles were in a state of constant contraction; the risus sardonicus continued; in spite of the large doses of bromide and chloral which were being given, the patient complained of not sleeping well, and seemed more or less anxious about himself; so on this morning I ordered 6000 units of the serum to be given at one dose; this dose was never repeated, for there was a decided change for the better immediately. On the morning of May 16th, the convulsions having stopped, I ordered a final injection of 3000 units. No more was required. The patient was in a state of relaxation.

From the night of May 2nd to the morning of the 17th, 1817½ grains of chloral were administered; and up to May 21st, 2202½ grains of bromide of potash were taken by the patient. Therefore there was an average dosage of 90 grains of chloral per day; and from the morning of May 5th till the morning of the 21st, there was an average daily dosage of 137 grains of bromide. On the morning of May 19th, one dram of compound tincture of gentian, to be given in a wineglass of water before each meal, was prescribed as a stomachic tonic. On the morning of the 22nd the patient asked to be discharged, as a vessel was to call at Antigua the following day, bound for Anguilla, which would take him as a passenger if I would allow him to go. As the patient at this time was free of any signs of tetanus and walking about, though not in a very vigorous condition, he was discharged.

The chief points of interest in this case are the uncertainty of the mode of invasion of the tetanus germs—whether through the pyorrheal mouth, through the slight break in the skin, made by a very small jigger, which caused so little disturbance that it was unnoticed by the patient; or possibly through a point of invasion that was not discovered at all; the large amount of bromide and chloral administered, extending over a period of 16 days, with so little apparent physiological effect, till the very last part of the treatment; and, last, the large quantity of the antitetanic serum injected, amounting to 75,000 units.

Perhaps it may be well to mention that the patient's temperature was seldom above normal, and usually subnormal, several days going as low as 97. Hughes states: "The febrile reactions are usually slight, but in many cases 102 to 104 5 is reached; and in some instances, as death approaches. 108 to 110 F. may occur, rising still higher after death."

From my experience with this case and others, I have come to believe in heroic doses of both antitetanic serum and antispasmodic drugs, and I believe these large doses should be administered early in the disease. It is my opinion that too small doses are much more dangerous than large ones, if they are continually depended upon.

DISCUSSION

Dr. John M. Manning, Durham: I remember a case of tetanus in a farmer who cut off two or three fingers in a feed-cutter. This farmer was carried to Watts' Hospital and dressed by a surgeon. The hand had healed up and he had gone home. The next day he came back to the hospital with tetanus, and died in the hospital a few days after his second admission. I suppose he was in the hospital two weeks before this tetanus developed. It didn't develop until he left the hospital and went home.

I want to thank Dr. Purinton for his very edifying paper. As Mayor of the city of Durham, each year for the past two years I did not suspend the ordinance against the shooting of fireworks because to my certain knowledge two children died from tetanus from shooting cap pistols. It is my understanding—whether correct or not I do not know—that in New Jersey, where most of the fireworks are made, those places are permeated with tetanus germs.

The only thing we have is the antitetanic serum alluded to by Dr. Purinton. I believe that is the only remedy for the disease. Every case I get where there is a punctured wound, especially from a nail in the street, I advise a dose of antitetanic serum, and I have never known a case of tetanus to occur after giving that serum.

Dr. John P. Kennedy, Charlotte: I recall, while resident in the Pennsylvania Hospital in Philadelphia, two little boys, brothers, five and seven years of age, who developed tetanus—one on the tenth and the other on the eleventh day following vaccination. Both of these boys came from New Jersey. It is a fact that tetanus is very prevalent in New Jersey, certainly in the vicinity close around Philadelphia. Whether the tetanus in these two children following vaccination was due to the vaccine virus being contaminated with the germ or whether it was due to contamination of the wound, I don't know. The same physician who vaccinated these two children had vaccinated other children with the same lot of vaccine, and none of the others developed tetanus, so it looked as though it was a case of contamination of the wound.

Dr. H. M. Eddleman, Gastonia: I don't know of anything that interests me much more than this. In my early days I had quite a good many of those cases—some from neglect, perhaps, in childbirth. Chloral hydrate, hot baths, all kinds of things were done. So far as I have been able to see I don't think anything I have ever seen did any good. I thought I had used every means at my command at the time.

I don't know of anything that horrifies a neighborhood so much as to see a case of tetanus. I consider this antitoxin one of the greatest

discoveries of the day. Since that time I have given a few doses and had the pleasure of seeing good results. I don't know yet whether bromids, chloral hydrate, or anything of that kind has any effect. I am almost ready to say, with my little experience, that nothing is any good but the antitoxin. I don't know what the gentlemen think about it, but that has been my opinion. I don't think anything has been of greater blessing to mankind than that discovery.

Dr. C. M. Strong, Charlotte: I think we ought to have more papers like this. It interests every one in the profession, as we are all liable to have this trouble. As Dr. Eddleman says, I don't know of anything more terrifying for the doctor and for the patient and the family than tetanus.

I had two cases that would be of interest as to the transmission of the disease. One came into the hospital as the result of a gunshot wound. That case was too far advanced to do much for, and he died of tetanus. Just about that time I operated upon a woman, an abdominal operation. About the fifth day she developed it. The two were in different wards. We tried to trace the etiology of it, the cause of the transmission, for it was evidently carried from one to the other. Finally we traced it down to a hypodermic used by the nurse, which had not been sterilized. She afterwards confessed. This patient also died. That was the only case I ever saw of direct transmission from one patient to another.

My experience with tetanus is that the shorter the incubative period the more disastrous the outcome; the longer the incubation the more hope for the patient. The only cure I have ever found is the injection, but I have never had any success with it after one day. I think the lesson to be drawn is to give all of them a prophylactic dose of this serum.

The doctor didn't say whether he gave the bromid by mouth or by rectum (most of my cases couldn't swallow), and whether he gave the magnesium sulphate through the skin or intravenously or in the spinal column.

Dr. Purinton, closing the discussion: With regard to the method of administration of the serum: the way I was situated at the time I had it to give it subcutaneously.

I have seen a good many of these cases in the West Indies, and they all present pretty much the same picture. I think I saved 75 per cent of them, but I should not have saved any of them if I had not had the antitetanic serum to use. I remember years ago, when at a hospital up in Maine, case after case of tetanus came in and I never knew one to get well.

I think Roswell Park was not singular at all when he said that no case of acute tetanus that had ever come under his observation had recovered. I have heard of one or two cases of tetanus recovering before the days of antitetanic serum, but they were so rare that they were talked about a great deal.

It seems to me that Dr. Manning's practice—and that is the one I used to follow when I was in the West Indies, and I should follow it now if I had occasion—of giving the prophylactic treatment is the only safe and logical thing to do. If the patient hasn't tetanus germs, it does no harm; if he has had tetanus germs injected into his body in some way, it may save his life.

In regard to those children in the hospital, whom Dr. Kennedy mentioned, I hate to think that the arm was not properly cleansed when the doctor vaccinated them. If it was not, maybe something on the surface of the children's bodies contaminated it, if it was properly cleansed it may be that something about the children's clothing contaminated it. I have no doubt that the latter would be a more logical thing to suppose, because in this day doctors are educated to such an extent that we don't expect anything of that kind from vaccination. I did 5,000 vaccinations last year, and I never saw a case of tetanus or what I would call a bad result from any of them.

It is certain that to get tetanus, one must have the tetanus germs introduced into the body in some way.

Dr. John Sweaney, Durham: I remember once being called to see a patient, a negro, who had tetanus. I didn't know what to do for him, but a nurse came in and said, "You inject into his blood sulphate of magnesia." We did that and he got well. We injected about two grams and moved his bowels.

This nurse was from Johns Hopkins. I told her I thought she did the best work I ever saw any nurse do. I have heard this discussed by the doctors from Johns Hopkins. I don't know whether it does any good or not, as a general thing, but it did do that patient some good. He commenced having spasms and had them all night long. He bit his tongue, and the case was a horrible one. However, we didn't give him any bromides, only sulphate of magnesia in gram doses, enough to move his bowels, and it had a good effect.

Have you had any experience with that, Doctor?

Dr. Purinton: In my paper I said that I ordered two ounces of sulphate of magnesia frequently. I thought it might have some good eliminative effect, but I should hardly be willing to depend upon it.

SECTION OF MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS' RESERVE CORPS

CHAIRMAN: COL. W. L. DUNN, M. D., ASHEVILLE

COL. W. L. DUNN, Chairman: This Section, of course, has been organized particularly to keep together and keep interested those who have seen service and those who are interested in national defense.

The Surgeon General has been good enough to detail Major Glenn I. Jones to come to us to talk about the Medical Officers' Reserve Corps. I presume it is not necessary to tell you gentlemen that Major Jones is in charge of the Medical Officers' Reserve Corps in the Surgeon General's Office, and I rather suspect that he is the gentleman who finally tells us whether we are going to be captains or lieutenant colonels or colonels or what not. I have great pleasure in introducing to you Major Jones of the U. S. Army. (Applause.)

THE MEDICAL RESERVE

MAJOR GLENN I. JONES, M. C., U. S. A.
WASHINGTON, D. C.

Colonel Dunn and Officers of the Veterans' Section of the North Carolina Medical Society: I have not come to this session with any purpose of presenting to you a finished oration on military matters or on the question of national defense. I intend to confine myself entirely to presenting to you as clearly as I can what is taking place in connection with the organization and perfection of that part of the machine under the present military policy which it is your obligation to organize and perfect.

It is not my purpose to indulge in those figures of speech which characterize on the one hand the type of individual in the country who conjures millions of men springing to arms in defense of the rights of liberty which citizenship in the United States guarantees to them; nor is it my purpose to present to you a Gulliver, bound and rendered impotent because of his state of unpreparedness.

I want to talk to you in a very matter of fact way and convey to you rather as your board of directors—your experimental laboratory—the plan of getting together the machinery which is supposed to provide in case of future emergencies the medical service for the Army.

It is useless for me to point out to you that we have had since the act of 1920 a military policy, one which those who were deeply and patriotically interested in their country hungered for in the days of Washington, a patriotic obligation, which is bestowed, not imposed, upon us as citizens of our country by the Constitution of the United States. With the Constitution goes the flag. Carrying the flag in the one hand you support the Constitution with the other.

Now making possible the success of this policy means that the citizens of our country must not only be intelligently informed of what is made possible by it, but, in addition, when they have knowledge, based upon that knowledge, they should give support to that policy so that the military machine in case of emergency is ready.

As I have indicated, the medical side of the obligation to make successful the act of June 4, 1920, which outlines the military policy of the United States today, belongs to you. Some progress has been made. It has been made, as we usually progress in this country, with a great deal of lost motion, a great deal of friction. I might say with a certain amount of discord, but not the discord that characterized our world war effort. We are groping in the dark, we are trying, in some instances, to make progress too fast.

When I say it is accompanied with a great deal of difficulty I mean to impose the criticism which that comment implies upon our regular Army, our people who are helping you to organize just as much as I do upon yourselves.

It is a new experiment. Recently I have become convinced that we are probably going a little too fast with the organization of this machine. Particularly I have come to that conclusion with reference to the medical profession—that we are trying to impose too much of a burden all at once upon the man in the medical profession who has become an officer in the Reserve Corps.

I have come to that conclusion to some extent by the reactions which I get in correspondence, where a man who commands a surgical or evacuation or general hospital has imposed upon him the burden of furnishing the War Department or one of its agencies with a unit plan for the mobilization of that unit for service.

Men are not acquainted with the methods of supply or the sources of supply of an Army unit, are not acquainted in many instances with the mobilization procedure of a unit. So we have placed ourselves in the position of making a demand upon an individual without giving him information or training.

Those things will probably continue to cause a little unrest, a little concern, particularly on the part of the reserve officer who has the responsibility of carrying out this important administrative duty of mobilizing a unit for service. If we are impatient don't be discouraged at what we impose upon you. Don't say that you have not the time to devote to the effort in which we are called upon to engage ourselves. Be patient and know that the whole scheme of preparedness will work out and that it is in the interest of the defense of the country.

There is one thing I want particularly to bring to your attention today. The organization work is going on well. We have now in the medical section of the Officers' Reserve Corps some 10,000 officers. They are splendid men, well equipped professionally. They are usually classified to perform duties in case of emergencies in positions analogous to the class of work which they are doing in civil life.

I think that there remain very few mistakes in the assignments of individuals because we use in our classification the record of a man during the World War, and the reports which we can get from the American Medical Association, and in the future to a more extensive degree we will use the military committees which we have organized in all the state societies.

Of course it is a simple matter to talk about the organization and classification of these units, but there is a tremendous amount of detail and labor imposed upon a small administrative organization. So in the case of contact between the office and the individual we don't make the progress probably that the individual expects of us with reference to appointment or promotion or classification and notification of assignment to units.

When you take into consideration that we handle some 60 cases a day of appointment, promotion and classification, the task which is imposed upon us is most stupendous. As I say, we make a study of the World War records, we use that as one point in classification. Secondly we use the directory of the American College of Surgeons, the directory of the American Medical Association, reports from the American Medical Association where procurable, and then correspondence with military committee.

The work in the South has gone on excellently. The percentage of physicians in the South, in the North Carolina area, is a little bit above that in most of the other corps areas.

The medical population of North Carolina was 2226, and the total Medical Department Reserve 294, and in the Medical Reserve only 124.

Now the number required from the fourth corps area, exclusive of medical regiments and regiment detachments, is 1194 physicians. There will be a total of about 1400 in other words, required from the whole Fourth Corps Area which, divided by about six, would give the number which would be expected from the State of North Carolina.

One comment I want to make other than the organization progress which is being made, has to do with the question of training. There is one mistake that we have made in the past—I don't mean it is a mistake; we have done it with a full knowledge of the facts—there is one thing that the reservist should take unto himself. That is the question of fitting himself as far as possible for the position which he is to occupy in the event of emergency. The training from the War Department standpoint has been neglected to a certain extent up to the present time due to the shortage of funds and due to the fact that we were engaged with the important matter of organiztion.

Of course we must visualize that organization is the first step. You cannot train unless you get an organization. That is particularly applicable to the medical department reserve where we know that classification is necessary, in order that a man may be assigned

to a position in a unit which is similar to that in which he is engaged when in civil life.

However, there is a problem of training which must be given considerable attention. You know the training agencies which have been provided, the training camps and the correspondence courses. It is hoped that next year, certainly by the year after, provision may be made so that a reservist can have at least two weeks of field training once in five years.

It is further the ambition of the Surgeon General to confine the training of medical officers to medical department training camps. By that I mean it is his purpose to concentrate the training of the medical department reservist to camps equipped with personnel and material for the training of officers in the work which they are to do in the event of emergency.

We feel that this is important for the reason that there is now in the United States only one complete medical regiment, one medical regiment where the personnel and equipment is complete. We have also one at Fort Sam Houston, which is incomplete; the personnel is small and it cannot be utilized for training purposes.

So you see the situation. There is only one medical regiment which can be used as a training instrumentality. We must find means to expand this, either by the equipment of a reserve medical regiment and the utilization of that medical regiment for training purposes of medical officers in camps distributed throughout the United States.

Last year we succeeded in persuading the War Department to endorse this scheme, and camps were conducted at Carlisle Barracks for the first, second, third, fourth and fifth corps areas. All branch assignment group medical officers from those areas were sent to Carlisle Barracks. They were given intensive training of an extremely valuable character, such training as would fit a reservist who attended that camp for a period of two weeks to carry out the functions of his office.

A medical department Training camp with less personnel and equipment was also conducted at Fort Snelling, Minnesota, for the sixth and seventh corps areas. For the eight corps area a camp was organized at Fitzsimmons General Hospital at Denver, and for the ninth one at Camp Lewis, Washington.

This year we are conducting camps in the same four places. The personnel has been elaborated, and a little bit more equipment has been gathered together at the three camps other than Carlisle Barracks, which is fully equipped.

As you may know, the funds for training of reserve officers are divided into two general groups. First there is that group which is to be expended for the training of officers who are under the jurisdiction of the Surgeon General, known as the branch assignment group; and funds for the training of all officers, regardless of branch of service, which are allotted to the corps area commander for the training of the reservist within each corps area.

Due to a change in War Department policy, a number of the units which were formerly under the jurisdiction of the Surgeon General have been been turned over to the corps area commander for administration and training. Of these units are the general evacuation and surgical hospitals, corps medical headquarters, corps laboratories, supply depots, and similar units.

With the marked increase in personnel, a tremendous demand has been made upon the various corps area commanders for training funds for this fiscal year. As a result of this we have not been able to get the Corps Area Commander, due to the inadequacy of funds, to consent to send all medical officers who are desiring training this year to Carlisle Barracks.

We feel that in the training of the reservist there is very little accomplished in sending a medical man to a camp like Camp McClellan to do physical inspections, physical examinations, ministration of typhoid prophylactics, etc. In other words, training camps for the medical officer are not intended to give instruction in medical work. That you do day by day. That is something in which you are supposed to be qualified.

The military side is a thing that is foreign to your daily work. It is a thing in which if you are called upon to operate in event of emergency of which you are not qualified to carry on the activities without training. The tactics and technique of operation of military units change just as the profession of medicine changes, so that the mere fact that a man had extensive service during the World War does not assure to him competent and unembarrassed administration of the military unit in a future war.

I might exemplify that by referring to the medical regiment of the World War. The organization is completely changed. Unless a man is placed in a position where he can get training in the operation of that unit he cannot use more than a very limited portion of the instruction which he got during the World War.

That brings me to the point of appointment and promotion in grade, which is closely allied to training. In the past I think we have been too liberal in promoting men to grades above that of major. I mean by that the examinations have not been as exhaustive as is desired. There are two reasons: Men should be reasonably well equipped on the organization, tactics and technique of operation of a unit of the medical department with which they are to serve.

The first reason is that under our present military policy we contemplate a degree of efficiency on the part of the reserve officer in functioning in his office which will require little or no training in event of emergency. Secondly, we feel if we pass men on those grades without having attained a reasonable knowledge of the organization and functioning of the unit, we have placed them in an embarrassing position. For if one of these officers is called upon for independent action—as he will surely be in that grade—his line commander is going to very soon ask for his replacement and he

will suffer the embarrassment of being sent back because of relative inefficiency.

I have reference to a war condition. You know, in the presence of war, the fact that a man has not had training will be no excuse for his inability to carry on the functions of his office. With that end in view I think that all reserve officers should support a policy which will impose upon them as individuals and impose upon them as groups a reasonable amount of study and training in preparation for the work.

Very frequently a man, high in professional work, in surgery, internal medicine, roentgenology, or other branch of medicine, will say, "Why should I know anything about the military service? Why should I know anything about military organization when I am to do surgery?" It is just as impossible for the chief of surgical service to satisfactorily perform the functions of his office as chief of the surgical service without a comprehensive understanding of the principles of evacuation and hospitalization, as it is for the roentgenologist doing roentgenology for 20 years to successfully perform an intricate surgical operation.

Those of you who saw service during the world war know how fracture hospitals were developed.

In connection with our preparation, the thing I started to comment upon a bit ago: the War Department training projects will aim to confine the instruction of reserve officers in training camps and correspondence courses, and whatever other training agency we may have, to an intensive course in military work.

In this connection you probably will be interested to know that the texts which have not been available to reserve officers in the past will within the next two or three months be available for distribution and will include in as digested a form as the text can convey information to you intelligently, everything that is necessary for you to know.

The texts have already been completed and they are now being boiled down so that it will not be too great an imposition upon your time. The work still needs your support. I don't think that it can be successfully promoted if you are careless or indifferent about the obligations which are imposed upon you. It is not an empty honor. It is something that carries with it a certain amount of work. We know that the work can only be done within limitations.

The Surgeon General fully appreciates that the men in the medical profession are busy men. However, I believe you can develop, particularly if there are groups of you in any one place, a very interesting avocation in the study of medical and line tactics and the work which the medical department will perform in time of war.

The Surgeon General very particularly asked me as I was leaving the office to convey to you, the members of your section and to the society, his best wishes and his appreciation for the support

which the Medical Society of North Carolina has always given in the promotion of the medical reserve corps.

I thank you, sir. (Applause.)

DISCUSSION

Col. W. L. Dunn, Chairman: I am sure we all very much appreciate and are very grateful to Major Jones and to the Surgeon General for the compliment that has been paid us in sending the Major here to talk to us upon this subject.

If there is any question that any one wishes to ask the Major I am sure he would be very glad to answer at this time.

Dr. W. G. Byerly, Coolemee: I served during the World War as a line officer part of the time, and five years as a reservist in the infantry. After completing my medical course I got a commission in the reserve medical corps. However, I have not heard a thing from the medical department, or the Surgeon General's office as to where I would be placed. The laxity of it struck me after having the Infantry keep up with me so closely.

As the Major said, I suppose they are overrun with work, but the younger men who are getting the appointments don't know where they can go to school, they don't know about getting correspondence courses and things like that. Those are things that many of us would like to find out about.

Major Jones: If a man is placed in the branch assignment group under the control of the Surgeon General and so notified he has not received notice of his specific assignment, nor will it be possible for him to be given notice of specific assignment for probably a year. If, however, he is territorially assigned, the specific assignment is made by the corps commander. Usually those things follow very soon after the group assignment is determined.

It is my judgment that probably there has been some miscarriage. What was the date of your appointment?

Dr. Byerly: About January first of this year.

Major Jones: That will account for one reason why you have not been notified. The change to which I referred in my talk was published in November, November 8th. We started on December 15th to make the transfer of 4500 officers of the reserve corps from branch assignment group to the territorial assignment group.

That meant all of the men of that group of 4500 were already assigned to units in specific positions. We then had to transfer each one of the 4500 to the corps area commander in the same position. From December 15th almost up to the present time, or until two weeks ago, we have had all we could do to make those transfers and keep up the daily work.

I have no doubt but that the delay in giving you a specific assignment has been caused by that transfer. It meant a complete transfer of all records. I have no doubt but that in a very short time you will receive an assignment. However, I should be very glad to have you, if you will, write a letter to the Surgeon General

and ask for a specific assignment, and I assure you you will get action within ten days after you write.

Another thing I would like to say to you is this: We published and distributed a brochure, an Army Medical Bulletin, about a year ago, Army Medical Bulletin No. 11, which was supposed to be the reserve officer's Bible. In other words, it gave information you want to know about training, about correspondence courses, where the training camps were held, about appointment, about promotion, everything that we could think of.

Army Medical Bulletin No. 11 was supposed to have been distributed to every reserve officer, and its distribution has been continued to those who have recently been appointed in the Reserve Corps. I can also furnish copies of that. It contains about 40 pages of information on the subject.

Col. J. W. Long, Greensboro: Mr. Chairman, I should like to ask that Dr. Byerly, in making his request for specific assignment, specify Evacuation Hospital No. 38. We should like to have him for detachment commander in that unit.

Major Jones: If any man wants a specific assignment to a unit, I want to tell you that unless there are very cogent reasons why the assignment should not be made, he will invariably be given that assignment. The officer's preference is followed if he is qualified for the position. If a man wants a specific position in a unit that is just what we want. That is the sort of organization that is going to make it successful.

Of course, there is the question of his being qualified for the position, but he usually is. Occasionally a man will come along who does a little veterinary surgery and wants to be the chief of the surgical service. That does not often happen. We try, when it does happen, to show him why he can't fill the position.

That happens where you are dealing with thousands of men. You know in groups you will always find an individual who has a very much higher opinion of his ability to perform a certain line of work than his actual demonstration of capacity shows him to have.

If a man wants a specific position in the unit, please let us know what it is and we will give it to him if there is a vacancy.

Col. W. L. Dunn, Chairman: We are very grateful to you, Major Jones. I am very glad that the Major has touched upon certain points in this talk. I confess myself to have been considerably disturbed, having, for some reason, been assigned to sit on many boards. The men coming up for promotion do not seem to take seriously the question of applying for advanced rank. I feel that particularly when men are coming up for promotion, the board should so far as possible let the man know beforehand that the examination is to be taken seriously. So many men seem to have the idea that it is nothing more than a mere formality where three or four men get together, smoke cigarettes, probably relate some of their war experiences, and, when they get through, adjourn, and

that is all there is to it except getting a commission for an advanced grade.

That, unfortunately, is not infrequently very true. Some time ago it seemed to me that these boards might be taken more seriously if those sitting on the boards appeared in uniform, if they were made more formal affairs. I asked the Surgeon General's Office if that was permissible. I was assured that it was not only permissible but was approved. It has made a tremendous difference in the work, because those boards have become formal military affairs. The sessions are given all the dignity that we possibly can give them, and we have tried to make men realize that they are applying for an advanced grade they must have some qualification for it.

The answers we have gotten are rather interesting. Just a point, however, before I speak of that. The Surgeon General has, by a definite letter, made an examination rather more important for promotion to the grade of lieutenant colonel than for any other grade. However, each member of the board is required to take an oath that he will fulfill his duties as a member of the board.

Unless one of the members has a definite knowledge of a man's military service and has known him very personally I do not see how we can approve a man for any advanced grade without some sort of an examination. It has been our custom in all cases to ask enough questions to convince the board that the man is at least reasonably well qualified.

I am sometimes very much afraid that unless we do take these boards more seriously than they are sometimes taken we are going to find our men coming into a new emergency nearly as unfitted as they were when they came into the last emergency.

For instance, a man applied for service with troops. He informed us that there were three divisions in a brigade, two regiments in a battalion. One man who was applying for a higher grade didn't know that there was such an organization as a medical regiment.

I feel that these examinations can be made real examinations without being offensive and without discouraging men coming into the corps.

I would like to ask Major Jones if I have gone astray in what I have said?

MAJOR JONES: You have not overstated it, sir.

COL. W. L. DUNN, Chairman: Now, gentlemen, I have great pleasure in announcing the next essayist, a man who served as psychiatrist to the Expeditionary Forces in Italy, and with whom I had the pleasure of serving. Those who know him know of his ability in this particular field. I feel that we are especially privileged in having with us today Dr. Osnato, who is Professor of Neurology at the Post-Graduate School in New York, who will talk to us upon "Psychoneuroses in Relation to Military Service."

I have great pleasure in presenting to you not only my friend but my comrade, Dr. Osnato. (Applause.)

PSYCHONEUROSES IN RELATION TO MILITARY SERVICE

MICHAEL OSNATO, M. D., NEW YORK CITY

Mr. Chairman, Ladies and Gentlemen: It is perhaps quite natural but very unfortunate that in times of peace we do not prepare for war. That single fact was responsible for a very great majority of the psychoneuroses in war. I think we owe a tribute to men like Colonel Dunn and Major Jones, who everlastingly keep at this business of preparation, because if there was any particular branch of the service that was in need of preparation and lacked it more it was the medical service.

I am not going to burden you with a rehash of the many discussions of the so-called war neuroses. It would be presumptuous upon my part to attempt to do that. I shall just briefly refer to some of the fundamental principles which underlie the neuroses in general, from which the war neuroses do not differ in any great particular.

All of the neuroses are based upon a conflict in which the personality is engaged, which makes itself manifest outwardly as psychoneurosis. These conflicts occur in peace just as frequently and overcome the individual just as decisively as they do in war. The man who is having domestic trouble of a serious nature is at war just as much as the man who is fighting in a serious engagement. It is just a question of degree and of the setting in which the conflict takes place.

The setting in which the war neuroses developed was perhaps more striking than in peace, but the psychological factors are the same.

That is all preliminary to bringing out one fact. If anything has occurred in recent years to give the lie rather strongly to the principle that all abnormal psychology is based upon the question of sex, the neuroses that occurred in combatants during the recent war served to absolutely modify the radical principles of the Freudians. (Applause.)

The first one of the Freudians to agree that the raw, basic instinct of self preservation, or the emotion of fear, the attempt to preserve the personality, was unquestionably the underlying factor in the real war neuroses was Freud himself. I refer, of course, to those neuroses which occurred in combatants.

I think that is an important thing because it helps those of us who are going to be charged with the responsibility of selecting the soldier and the officer with an eye to preventing the incidence of the war neuroses, to understand what we must look for in the prospective doughboy and more particularly in the officer.

The two instincts which we have to deal with chiefly in the neuroses of combatants are those of self-preservation and the instinct of pugnacity. The emotional disturbances growing out of

reactions to these instinctive drives result either in fear and a cowardly fleeing from the conflict, if the instinct of self-preservation is too strong, or, if the instinct of pugnacity is not strong enough, in abject surrender.

These are the high spots in a brief discussion of the production of the neuroses. It is just a question of disturbance of certain very simple, basic, instinctive reactions.

Now all of these remarks refer particularly to the neuroses occurring in those who do the actual fighting. A classification might be made of the neuroses occurring in combatants and those occurring in non-combatants. There were those who never got near the front at all who also developed neuroses. The war veterans' hospitals are filled with psychoneurotics who never left these shores. It is in just these cases that the principles underlying the psychoneuroses in general apply even more forcibly. They were simply the inadaptible individuals, unable to toe the mark when faced with responsibility of a new situation pregnant with unpleasant possibilities. They have given this country a tremendous burden to carry and have cost the Government of the United States untold millions, and will continue to do so during our generation and part of the generation following.

The psychoneuroses in officers who were non-combatants deserve special consideration. Maladjustment was the chief factor causing the neuroses in the officers. There were many men who volunteered and served as officers in the Army, both as medical officers and line officers, who were driven to that act by a series of difficulties in their civil life.

There were a number of men who went in as a way out of family difficulties. Of course the Army didn't clear these difficulties up, but added others, and these individuals who were unable to adjust the original difficulty were faced with another group of emotional factors and reacted by a neurosis.

Some of the officers resented very strongly the slowness in promotion or the entire lack of promotion in some cases where it really was deserved. I think Colonel Dunn will remember a medical officer who boarded with us for a number of months in one of the hospitals in Italy, the basis of whose neurosis was a very keen resentment against everybody who had been his superior because he felt they had not aided him to promotion. It was rather an understandable thing, too. This man came from a small town. He was over 40. He had gone in as a lieutenant, had been in a long time and for some reason had not been promoted; perhaps very good reasons existed for his not being promoted. He was very much disturbed at the prospect of returning to this little town still a lieutenant after so long a time overseas. This disturbed him so much that he presented the general picture of the psychoneurotic, with which I shall not burden you. There was a question in the mind of Colonel Dunn, who was rather material about some things, whether this man was altogether genuine or not, but I was con-

vinced that his neurosis was a compromise between his conflict and his injured personality.

Now these types of maladjustments, these psychoneurotic individuals who never actually fight, who never got near the front, present an entirely different picture from the three groups of neuroses occurring in actual fighting men. There one dealt first of all, most commonly in the doughboy, with an actual major hysteria, with all of the symptomology of that condition.

Then there was a fatigue neurosis or exhaustion psychosis. Boys who have been underfed, who have slept very little for days, sometimes for weeks, who have been subjected to fear and real danger, who have lived through thrilling and horrifying experiences, used to come back in the throes of a delirium or a stupor or an actual exhaustion psychosis, but they cleared up fairly rapidly and generally were very anxious to return to the front and often did so. I saw no American boys of that type, but I saw quite a number of cases of that character in Italian soldiers when I was on detached service with the Italians.

Then the third type, usually occurring in the officer, was the anxiety state. A keen, intelligent officer, who recognized very vividly that he was afraid but realized that he had to carry on so as not to communicate his fear to his men, as the result of this conflict usually began to sleep badly, and after a time developed a very distressing anxiety state which in many cases did not clear up until long after the Armistice.

These pictures are readily understandable. They are very sharp, decisive reactions, which are clear-cut and entirely different from the maladjustments occurring in non-combatant men and officers.

This is all preliminary to the prevention of the psychoneuroses. I think the main factor in preventing the psychoneuroses rests with the draft boards (if we ever have them again), the medical advisory boards, with the medical officers in the camps, and, above all, the neuropsychiatrists.

I think the big mistake in the beginning of our entrance into the war was the great drive to get men without giving consideration to the desirability of selectivity. I think the Government would have been saved a great deal of trouble and a tremendous lot of money if the boards had exercised a little more judgment in the matter of selection of these men subject to the draft when they came before them for examination.

In the last analysis the choice should fall really on the neuropsychiatrist. I am not trying to glorify the neuropsychiatrist, but by training he is the man who is more likely to properly size up the prospective soldier and officer and recommend the specialization of their activities.

The question of periodical military training for the prospective soldier and officer is extremely important from the neuropsychiatric standpoint. It is absolutely out of the question to take a built-up

personality at 21, one which has never had rough dealing, one whose repressions are few and whose power of free individual expression is great, and, in a few months, expect to make him a good soldier. It simply can't be done.

The way to make a good soldier, it seems to me, is to have some sort of a plan, as they have in some of the European countries, of periodic, compulsory, intensive military training applicable to everyone, with the exception of those upon whom it would quite obviously be impossible to impose these privileges. It is impossible, too, to expect a boy who has been brought up in a sheltered way in a fine home, with all the comforts, with unlimited opportunities for pleasure, with the consequent physical unpreparedness, to go into camp and compete with a boy who goes to camp every summer for four or five weeks and is accustomed to camp life and the self-discipline it imposes, and expect both to make equally good officers. So a level in all of these things would have to be reached and a fairly uniform standard set, and it seems as if compulsory, intensive, periodic military training were the only possible solution. Whether, of course, the politics of this country makes such a thing possible is a question, but its desirability, I think, is quite obvious.

The same thing applies to military training, particularly for medical officers. It does not seem to me that the Army wants or even needs the ultrascientific doctor. I am quite sure the Surgeon General's office was embarrassed during the war by the offer of help from men who had no conception at all of military duty and no conception of military discipline. Some use should be made of men of this type in the capacity of consultants, it seems to me, perhaps without rank. The title of "Contract Surgeon" I think fills that need fairly well.

However, I want to emphasize my own feeling, which agrees exactly with that of Major Jones, that medical officers should be intensively and periodically trained so that their duties will be perfectly well-known to them in case an emergency should arise.

Now a word as to the place of the neuropsychiatrist. Upon every draft board, every advisory board in every camp, a trained neuropsychiatrist should sit. The doughboy who presents himself might not in his opinion make a very good member of a fighting unit, but he might do very well, for various reasons, as an engineer or as a pioneer, or he might be used in one of the allied trades during the war emergency. That is the greatest service a neuropsychiatrist should perform.

I think it would be very much more important to realize frankly that anyone who presents himself during the operation of the draft may not be a good prospect as a soldier, and eliminate him immediately, placing him in some other service, than to have that boy go into the Army and break down as a result of maladjustment, as so many of them did and as so many of us knew that they would when we were in this hysteria of hurry to get boys for our Army.

So, too, with the officers. The infantry officer, I think, is almost born, and not made overnight. Too much intelligence is not always a requisite in an officer, because those who have too much intelligence and imagination are not always able to execute orders. In the Army it used to be said, perhaps with a great deal of truth, that it is really not one's business to think but to obey, and those who are too sensitive, and whose intelligence is too keen and whose power of self-discipline is not fully developed, might better not serve as line officers but perhaps in some other capacity.

I believe that every medical officer should have a neuropsychiatric report attached to his record when he enters the Army. The influence of such a medical officer with the regimental officers, particularly, should be tremendous. The influence which he could exert in maintaining and increasing morale is extraordinary. The depressed, morose, shut-in type of medical officer is absolutely out of place with an active combatant outfit. He might be better off in some other branch of the service.

The neuropsychiatrist is also of tremendous importance in sitting upon the promotion board. When the line officers and medical officers come up for examination for higher grades, the neuropsychiatrist should present a report, and it should receive great consideration. In the Army, as in civil life, the higher the grade the greater the responsibility. Therefore the more necessity for a neuropsychiatric inventory in the higher grades.

In closing, the prevention of the psychoneuroses should be our aim, not a re-discussion of the war neuroses, which we all understand so well, and the chief point to be considered in the prevention of the psychoneuroses is proper preparation. (Applause.)

DISCUSSION

Dr. A. E. Bell, Mooresville: Mr. Chairman, I don't feel that I can add anything to the paper presented. Dr. Osnato, very fortunately, has the facility and the ability of presenting rather obscure and dark subjects in a very lucid manner. The subject of psychoneurosis in private practice is always one of the most difficult questions that we men who deal with these cases have to come in contact with. I suspect that the most far-reaching statement that he has made is the statement that all psychoneurosis does not depend upon a sex complex. The Freudian school has had its day, I think, in American medicine. There are a great many factors just as important in developing psychoneurosis as sex. In fact, my own experience has proved to me that it does not constitute even the majority of the causes.

The psychoneurotics who come to me are those, usually, who show lack of early training. In getting their history (and the history of their parents, their family history) from childhood, I find that the environment of the first few years of life, even dating back almost to birth, is the most important determining factor in the adjustment of this person to his surroundings. It is the maladjust-

ment of any personality to his environment which constitutes the psychoneurosis.

We are always glad to hear a man who has made such a thorough study of this subject and can present it so clearly. (Applause.)

Col. W. L. Dunn, Chairman: I feel that we have been particularly privileged in having Dr. Osnato with us today. He has given us a most interesting presentation of the subject, and it is the sanest sort of talk along this line I have ever heard. I want to say, from personal contact and experience, that Dr. Osnato is just as skilful in the actual handling of men and conditions as he is in expressing himself to us in language that we who are not versed in this particular field can understand.

It was an especial pleasure to have served with Dr. Osnato during the war, to have had an opportunity to see the man's insight into men. That was not only true of the American soldiers with whom we came in contact, but also of the Italian soldiers, with many more of whom we had to do.

I wish to express to Dr. Osnato the great appreciation of this section and of the North Carolina State Medical Society for his having come to us and having talked to us.

HEART IRREGULARITIES AS RELATED TO MILITARY SERVICE

Thompson Frazer, M. D., Asheville

There are two forms of irregularities that are commonly met with at the age of military service. These are: sinus arrhythmia and premature contractions (or extrasystoles, as they are less correctly called). Sinus arrhythmia is common in childhood, less frequent but still fairly common in early adult life; in fact, a slight degree of this irregularity can often be detected in a pulse of 75 or under. It consists of a gradual waxing and waning of the pulse rate, the heart beating more rapidly with inspiration, less rapidly with expiration; sometimes it is independent of the respiratory phase. It is an irregularity in which the whole heart partakes and is due to a variation in the activity of the vagus and its effect on the sinus or pacemaker; the rate of the heart is increased or decreased according to whether the vagus is less, or more active. This irregularity can be abolished by having the subject exercise so that the pulse rate is increased to 120. It is a benign irregularity and can be disregarded in the military service.

PREMATURE CONTRACTIONS

The normal rhythm of the heart is disturbed by a beat which occurs ahead of time and which is followed by a pause; these premature beats may occur only occasionally or they may be noted several times during the course of a minute. If the pulse is taken at the wrist there may be discovered a beat which follows closely upon a regular beat and which is succeeded by a long pause; but if

the contraction of the ventricle does not open the aortic valve, or sends only a feeble trickle through the radial, we will have a dropped or missed beat at the wrist. The importance of this is that it simulates one form of heart block. Again, if every other beat is premature we may be deceived into thinking that we have a bradycardia.

By listening at the apex we will hear (except in rare instances) one or both sounds of the premature beat which will distinguish this condition from heart block, in which the missed beat at the wrist is accompanied with absence of heart sounds. Lewis, in his book on "The Soldier's Heart" says that premature beats are without prognostic significance and that they too can be made to disappear if the rate of the heart be increased to 140 by exercise. While it is true that these cases appear to be free of cardiac embarrassment there are some that can not be so readily dismissed, especially those where the premature beats are frequent or multiple, that is, several occurring together. Pardee suggests that where they are only occasional and are readily abolished by means of exercise, they are probably not significant; but where the irregularity is more marked and when it is increased by exercise, we are very likely to have some pathological heart condition as the cause. In any case, then, the response to exercise is the best test for the fitness of the soldier.

One might occasionally come across a case of auricular fibrillation, and, while such cases are obviously ill, they may be further characterized as follows: The pulse is usually rapid, 120 or over, it is very irregular, and remains irregular despite exercise. Such subjects are not fit for military service.

Col. W. L. Dunn, Chairman: The next paper is "British and United States Evacuation Contrasted," by a man who has had very abundant opportunity to gather material upon this subject, a man who served with the Gordon Highlanders during more than a year of actual service, who was actually under fire with them for twelve or thirteen months. He is particularly fitted to contrast for us today the two services. I have pleasure in introducing Lieutenant-Colonel W. P. Herbert, of Asheville.

THE EVACUATION OF WOUNDED WITH THE BRITISH AND AMERICANS CONTRASTED

Lt. Col. W. P. Herbert, M. D., Asheville

The handling of sick and the evacuation of wounded at the front has always constituted one of the most difficult problems that military leaders have had to contend with. The necessary care and attention to these men must be effected without any impairment of the fighting strength of the military force, and without interference with the efficiency of other arms of the service. The transportation of sick and wounded should be carried out by non-fighting men. Of necessity this transportation must be uninterrupted, and the return of minor casualties to the front for replacements must be as rapid as possible.

The former days of courtesy and consideration by the enemy have become a thing of the past; no longer is there a cessation of hostilities to allow for the clearing of the battlefield, and the transportation of the sick and the wounded to the rear. Present day evacuation must be carried out from a battle-field, tangled with barbed wire, torn with shell fire, pitted with shell holes often ankle or knee deep in mud and water, under the constant menace of enemy bullets, trench mortar shells, artillery fire or gas attack. It must be done under cover of darkness, where the intermittent lights of flares and rockets may reveal movements which immediately draw fire from the enemy. The wounded, having been removed from the battle field, must be carried through intricate trench systems to the dressing station and from there to the collecting station, still constantly menaced by the hostile activities of the enemy.

When these changed conditions are considered it is not surprising that the old methods of evacuation have been found inadequate and that many changes were inaugurated during the recent World War.

In the following remarks, in which comparisons between the British and American methods in the late war, I do not wish to be considered critical of the American methods, or to laud the British too much at the expense of the Americans. At the time I joined the British Army they had had three years experience. Doubtless had I joined them in 1914 I would have found conditions as inadequate and necessary for change as was the case with the Americans in 1918. It is probable that the British used much the same methods in 1914 as the Americans employed when they entered the war, for often in describing the American scheme of evacuation to the British I was told, "Yes, that used to be our method," or "we used that method in the Boer war but it didn't seem to work very well."

For this reason my paper is more a resumé of the methods developed by the British. Since the World War the British methods have been adopted in their larger sense by the American Army.

In the spring of 1917 evacuation by the British was carried out from the front backward in the following manner: The wounded were collected from the field by the medical personnel of the battalion. This consisted of company stretcher bearers and stretcher bearers from the battalion aid post. Supposedly the company stretcher bearers transferred the wounded from the field to the battalion aid post. The battalion stretcher bearers then made the transfer to the advance dressing stations, which were maintained by the field ambulance section. It was then the duty of the field ambulance section to make the transfer from the advance dressing station to the collecting station, which was also maintained by the field ambulance corps. From the collecting station the transfer was made by the motor ambulance corps to the casualty clearing station, from there by rail to the base hospital. Each division carried three field ambulances, the province of which was to maintain the advance dressing stations, a collecting station which also served as a dressing

station for neighboring troops, and a mobile hospital unit usually under canvas cover. The field ambulance units supplied all the stretcher bearers except those furnished by the battalion to the battalion aid post. The stretcher bearers of the field ambulance units were men unfit for regular military duty, but usually men who had seen active duty or men who were accustomed to shell fire. Sanitation in the front areas was entirely under the supervision of the battalion and field ambulance personnel. Inspection of drinking water, the disposal of all refuse, and the sanitation of kitchens and latrines came under their jurisdiction.

Because of the attention paid to minor details, the Royal Army Medical Corps soon became one of the most, if not the most, effcient arm of the British Army. The battalion and the advanced dressing stations were thoroughly equipped. Acetylene or oil lights were supplied; operating tables and stretcher racks were in abundance. Sterile water and sterilizers, with necessary instruments, solutions, medicines, antiseptics, sterile gauze, cotton, and bandages were to be had at all times. There was sufficient hot water for the filling of hot water bags. Provision was made for supplying the sick and wounded with food and hot drinks. Cases were given morphia when necessary, and every wounded man was given a prophylactic dose of tetanus antitoxin, an indelible mark being put on his forehead or the back of his hand to indicate that he had had such injection. Splints were applied when necessary, and were replaced by the returning stretcher bearers. The construction of the stretcher had been perfected. The sides were made of seasoned oak, cut long ways with the grain, with large handles, so that they never broke and could be carried without cutting the hands of the bearers. They had large iron feet which fitted into the runways of the ambulance, so that an ambulance could be loaded with four litter cases in a few minutes.

The development of the Thomas splint did more to reduce the mortality of cases than any other one thing. All stations were supplied with this splint and all personnel instructed in the proper method of application. Also, each stretcher was equipped with an upright into which the boot of the patient fitted, so that these cases could be transported with the leg carried as in a sling.

Each advanced station was equipped for the care of gas cases. These cases were stripped, passed into a room and given a thorough bath with chloride of lime, then into a second room where they were supplied with clean clothes.

The sanitation of the forward areas was highly perfected. All drinking water was inspected every week and the necessary amount of chlorine estimated and supplied to render it suitable for drinking purposes. Latrines were either pit or bucket. Where the buckets were used the latrine was so constructed that the urine and feces were collected in separate compartments, so that the feces could then be incinerated.

Attention was paid to grease traps, to the disposal of garbage, and to the screening of all meats and foods. Each man was supplied

and kept supplied with two pairs of clean socks, so that in case of exposure, wetness, dirt, and cold he could dry and clean his feet, putting on a pair of clean dry socks. In this way the great ravages of trench feet were overcome. so much so that the incidence of a case of trench feet in the winter of 1917-18 was cause for court martial.

Every medical officer was plentifully supplied with maps, so that he might be thoroughly familiar with his surroundings. A copy of all orders was also sent to him, so that with the coöperation of his superiors he could make provision for the establishment of new dressing stations in case of an advance or a retreat. The ground was thoroughly studied and gone over where possible, looking to the utilization of canals, narrow gauge railways, or old roads for the more rapid evacuation of wounded. All departments were instructed as to the probable location of dressing stations, and trenches and routes leading to these stations were plainly marked.

The attainment of such efficiency was only acquired by long and hard experience. The British had been tried and tested in the crucible of war. It is not surprising that the Americans fell far short, lacking this experience. Furthermore, the American Army was the victim of exploitation by ignorant and sometimes unscrupulous manufacturers at home. The stretchers supplied were light, flimsy affairs which broke when the first severe strain was put upon them. The ambulances were not constructed for rapid loading. The G. I. cans were in no way applicable for the use to which they were put, soon becoming bent and twisted, with tops which no longer fitted. Even the famed Lister bag, containing as it most often did a gelatinous collection of sediment, due to the overapplication of chlorine, was apt to cause one to lose his taste for water and to have recourse to the wines of the country.

But it was in the forward evacuation stations that the most tragedies occurred. These stations were not properly equipped. Their personnel was inadequate, poorly instructed and lacking in experience. The vast majority of stretcher bearers were rushed up at the last minute. It was not to be wondered at that they failed under intense fire, lost their heads, and became more of a hindrance than a help. This was not always so. There were many cases of heroism, of the overcoming of obstacles, and of the accomplishment of seemingly impossible tasks under the most trying circumstances. The mistakes were being corrected and each week and month saw the medical units more efficient.

In retrospection, the knowledge of these shortcomings has led to the revision of our evacuation system. The sanitary train no longer exists, and has been replaced by the medical regiment. Now, with the establishment of the reserve corps, we have an organization which will find us not so lacking, should our participation in another war become necessary.

DISCUSSION

MAJOR GLENN I. JONES: I can't resist the opportunity to comment upon Dr. Herbert's excellent paper. I think all his criticisms are appropriate in connection with the American situation as compared with the British. I would like to trace a little history, not in justification at all, but it shows the state of unpreparedness which was responsible for this condition.

You may or may not know that it was not until 1916 on the Mexican border that we got our first motor equipment in the United States Army, which motor equipment was rushed down in order to get food to the men who had been in Mexico. You will remember that General Pershing made phenomenal marches after Villa in his effort to get the bandits. There was no motor transportation. Of course the old ration wagon, which could make at best eight miles a day, had no chance of keeping up with the cavalry outfits which were in pursuit of Villa.

The first trucks came to Columbus, N. M., and were used to get food out to these men. I should like to state, by way of comment in passing, that some of those troops in Mexico were getting what parched corn they could to rub in their hands, giving part of it to the animals and eating the rest of it themselves. They were not starving, however, for that situation existed for only a few days.

We know that the American public did not know that. We know also that the American public did not know that those troops, when they came back as casualties, came back without shoes on their feet. In other words, it was temporarily a duplication in a tropical country of exactly what occurred at Valley Forge.

However, to get back to the question of transportation, the first motors the United States Army had came in to Columbus, New Mexico. That was in 1916. They came in by express at $750 a carload, two motor trucks to each car. They were rushed down there by express in order to get supplies out to the troops. There the first motor convoys of the United States were organized. It was the beginning of the motorization of the United States Army.

To go a little further: In 1914 and 1915, as late as 1915 certainly, when General Wood started his citizens' military training camp at Plattsburg, was the beginning of any military effort on the part of this country to train men in time of peace. You may or may not know that those were voluntary contributions on the part of the citizens of the country. Men from New York and all over the country went to Plattsburg, volunteered their services and did some military training.

It happened to be my pleasure to be at Plattsburg in 1914 and 1915, at which time we would start out on a maneuver with these citizens in the military training camps. They would say, "We want to put on a little medical problem today." I was serving as the only medical officer with the regiment. (We only had one regimental aid station to each regiment, and not four as we have today, in accordance with the British scheme. As a matter of fact, we

served in the World War with only three.) So the chief surgeon of the outfit would say, "All right, Jones, we want you today to put on a little maneuver problem which will include the evacuation of 20 wounded. We have them all tagged for you. You will set up your regimental aid station, and then after you have evacuated them through the regimental aid station, you will go back and organize a field hospital, a sort of extemporized field hospital."

That is the way we carried on our maneuvers. Most of the time what would happen when we got ready to put on a beautiful little maneuver (and this military master mind had it all fixed up the way he was going to evacuate casualties all the way through, and was ready to go out and pick up the 20 casualties with a handful of above five hospital corps men), was that recall would sound and they would go to lunch, and when we would go to get the boys who were knocked out in combat they were not to be found.

That was the difficulty under which we tried to carry on maneuvers. It was a characteristic report of those who were interested in developing some sort of medical training and some sort of medical service that just when we were ready to shoot, recall was sounded. That is always what happened.

You know, the sanitary train was an evolution of the World War. We had no sanitary train before the World War in the United States Army. So we built up something which was based upon the structure. It was a combination of the British and French, but principally along British lines. There was no sanitary train known to the United States Army prior to the World War. We organized one.

I think the first outfits that went to Europe had only one regimental aid station to the regiment, instead of three or four. We had no conception of casualty rates and the need for medical units in our Army up to that time.

As Colonel Herbert has pointed out, there was a fairly rapid appreciation, considering the conditions, of the fact that we were not properly organized, that we didn't have the proper units to take care of the medical service, and an evolution took place, so that I believe, even with the sanitary train, we developed an evacuation system at the end of the war which was comparable to the British system.

I might say that when it was successfully done, however, the sanitary train could not always be recognized as a sanitary train, as organized. In other words, a good commanding officer of a sanitary train improvised a collecting station and he separated his litter barriers for the front from his litter barriers at the rear.

I think Dr. Herbert's criticism is most pertinent, and he draws a true picture of the situation as it existed.

It should also be borne in mind that the first contribution of this country to service in the World War was a contribution of 800 doctors who went with the British, of whom Herbert, I believe, was one who fought with the British before we entered the war. They

were the first of our people who entered into any active participation in the World War, to help out the British, who had pauperized their medical institutions and were not producing any doctors. That, of course, was a mistake of the British. In fact, I could point out a lot of mistakes of the British if I were on the defensive, which I am not. (Applause.)

COL. W. L. DUNN, Chairman: I think we are very fortunate to have had this paper and Major Jones' discussion of it. I don't know of anything that has brought out more clearly and emphasized more the necessity of the organization in which we are trying to interest members of the medical profession today, the Medical Officers' Reserve Corps.

LT. COL. HERBERT: There is just one thing that I didn't touch upon in my paper. I think the most important thing for the medical corps of the United States Army that came out of the war was the fact that during and since the world war they have been placed on a sound, solid footing. At the beginning of the war the medical corps of the United States Army was apt to be pushed into the background. They were apt not to be given proper recognition.

Any little Tom, Dick or Harry who outranked a medical officer could give him an order, could push him out of a dressing station, could do anything he wanted with him, and he had no position, except the position of his rank, which was most often an inferior one and which had to give place to some major of artillery or a sapper or some other man who wanted the soft spot in a dug-out. That would disrupt the whole works for the medical department.

Since the World War this has been done away with. While I am thoroughly cognizant of the mistakes the British made and were still making when I joined them, I do want to emphasize this fact: with the British a medical officer was absolutely supreme. If an order came from the commanding officer that the Gordon Highlanders were to move and go to such and such a place, and if I as a medical officer with the rank of captain came out and said those men were unfit to travel, there was no power on earth except my superior medical officer that could move those men.

That is what we lacked in the American Army. The other arms of the service took precedence over the medical arm of the service, and they could give orders to us and could disrupt our whole medical force and make us do what they wanted. That is the important thing, to my way of thinking, that came out of the war. (Applause.)

DR. E. C. HOLDEN, High Point: Has anything been done to overcome that in this new organization that you speak of? I think if there is any one thing that keeps men who have served in the World War from going into your reserve corps it is that, the fact that they were overruled by the line officers. They would give an order and it was overruled by the line officers over and over again. They had no standing with the line officers.

At one time I was camp surgeon. I know the line officers overruled my recommendations a number of times.

Has that ever been changed? I should like to ask that question.

Major Jones: With Colonel Herbert's permission, I should like to respond. Of course you all know in all armies the recognition which has been granted to the medical man has been tardy. In our own army I think we have made as much progress in gaining recognition for the work of the medical officer as in any other.

This thing should be borne in mind, however: the medical department of a division is a part of the division. It should further be borne in mind that a surgeon on the division commander's staff is his adviser. Remember that you bear no responsibility except such as he imposes upon you.

The division commander is responsible for the sanitation of his command. The division commander is responsible for the sanitation of his billet. You are his adviser. In my experience I have never had any difficulty in carrying on my medical work in an advisory way.

There is this thing that the medical man should bear in mind. I say this as one of you, not as one who is playing the military game. In public health in a state, in a city or in a town you can do more by gentle insinuation and by persuasion than you can do by being endowed with great authority.

If anybody overruled any work that you did by proper authority, I can't resist making the statement that it is due to your own weakness. Nobody can tell me that he won't do what I tell him to do in the United States Army at this time or 15 years ago, when the man who is responsible and for whom I am technical adviser has given me the authority to do it.

When a brigade commander in a division defies an order which I issue in the interest of the health of his command, when I am properly endowed with authority by my division commander, regardless of his rank his defiance is impotent, because I am speaking as the major general of the division.

You run into those things. You will run into them in daily life. It is rather a natural state that when two men don't agree they start to fight with each other, but simply because you are a medical man, simply because you lack military experience, if you know you are right don't let them put it over on you. I am rather inclined to believe that there was an effort being made to put it over on you.

You don't always get the spirit of coöperation that you like. You don't get it in civil life when you are putting over sanitary work or public health work. You don't at times even get it from your own colleagues, but don't show your temper simply because you have a quarrel with a fellow. Life is full of it. No successes are attained unless you have quarrels.

The important thing to know is that after it is over you can shake hands with the other fellow who fought you. That can be particularly applied to military service. I have had commanding officers that have been wrong.

You will run into conflicts. A good fight with a chap when you know you are right certainly stiffens up the backbone and helps make the world look more rosy. You will find that in military service. When you know you are right, go to it. Don't assume any prerogatives with which you are not endowed. Remember that while you are the adviser on sanitation you are not the fellow who is endowed with responsibility.

If some officer under that commanding officer who happens to rank you tells you where you get off, go to the fountain head—you will always get support. I have yet to see a medical officer turned down on an important recommendation in which he was right. He may be turned down on a minor situation where it is weighed in the balance by the commanding general, but as soon as he turns you down the commanding general assumes the responsibility. It isn't yours. Take it with good grace. If the commanding general is wrong, it will prove itself for you. He is usually big enough to face about. (Applause.)

THE IMPORTANCE OF X-RAY IN GASTRO-INTESTINAL DISORDERS IN SOLDIERS

JOHN D. MACRAE, M. D., ASHEVILLE

X-Ray studies are useful in a large part of all gastro-intestinal disorders, whether in civilians or in soldiers. Two things will determine whether the patient will be examined or not by means of x-rays: First, suitable equipment and a competent radiologist; second, the attitude of the attending physician to the use of x-ray.

An enumeration of conditions which are recognizable by means of fluoroscope and films will support the statement that x-rays are useful in a large part of all gastro-intestinal disorders.

The esophagus may be the seat of ulcerations or new growths, strictures, dilatations or foreign bodies. The stomach may be affected with cardiospasm, hourglass constrictions, of deformities resulting from cancer or ulcer; may be distorted in form or position by extragastric tumors or scar tissue.

There are comparatively few lesions to be demonstrated in the small intestines. The first part of the duodenum is the region where ulcerations or adhesions with the gall bladder are found, and occasionally diverticulate. The terminal ileum may be constricted by adhesions secondary to appendicular inflammations.

The colon is the site of different neoplasms, ulcerations, ptosis and dilatations.

The equipment needed for gastro-intestinal study is available for soldiers in the large general hospitals and as these conditions are chronic it is practicable to move such patients to the general hospitals when necessary.

Physicians who have had opportunity to x-ray their gastro-intestinal cases or to have them x-rayed by one competent to do this work have come to use the method freely. On the other hand, those whose experiences have been disappointing, by reason of mis-

taken diagnosis at the hands of poorly trained radiologists, naturally have no use for x-rays. The army system of frequently changing medical officers from one service to another permits very few men to become proficient in this field. Hence the need for moving the gastro-intestinal patient to a general hospital.

While a few good radiologists rely almost altogether on fluoroscopy, and a few others on the serial plate or film method, it has been demonstrated to my satisfaction that a combination of the two methods is best, and I believe the average experienced radiologist holds the same view.

My procedure is as follows:

No preparation is required other than abstinence from food on the morning of the x-ray study, unless the gall bladder is to be examined. Then the patient is to be thoroughly purged and given very little food on the day preceding. He presents himself early in the day and is given sixteen ounces of a suspension of barium in malted milk. While he swallows this he stands erect in front of the fluoroscope. If there is gastroptosis or retention in the gullet a film is made in this position. Then fluoroscopic examination is made while the patient lies on the table, turning him about so as to see the stomach and duodenal cap from various angles.

The patient is allowed to do as he pleases for the next six hours, except that he is instructed to take no food until the sixth-hour film is made. After this he may eat according to his usual habit, but is not to use any medicines nor enemata which may move his bowels.

Twenty-four hours after taking the barium suspension another film and fluoroscopic study is made.

While this is the routine procedure, variations are made in accord with special indications in the patient.

THE MEDICAL R. O. T. C. A FACTOR IN THE SOLUTION OF THE MEDICAL ECONOMIC SITUATION

Col. Joseph Howell Way, M. D., Waynesville

When I received license to practice medicine in North Carolina the standard requirements for students applying for the degree of M. D. in the best medical schools of the country were chiefly "to have been engaged in the study of medicine for three years, including the time spent under a preceptor, and attendance upon two courses of medical lectures. As a matter of fact, the "courses of lectures" were the same each year, first and second year students sitting in the same classes and listening to a repetition in the second year of what had been delivered in their presence the initial year by the same didactic lecturer. A limited number of clinics (conducted as a rule exclusively by the "professor" himself) were held, and laboratory instruction given in Hahnemannian potions.

Attaining the age of twenty-one years a couple of years later, I joined the North Carolina State Medical Society, discovering, as I became acquainted in the profession that there were quite a num-

ber of excellent practitioners of medicine and surgery, residing in this and other states, enjoying the confidence of their respective communities as capable and respected members of the medical profession, caring for large practices, and day by day serving the trusting public probably almost, if not quite as well, in the immense majority of cases treated by them, as do the disciples of Aesculapius of the vintage of the last decade. A number of such doctors were men of great common sense, but whose medical schooling had been limited to the advantages derived from attendance upon a single five-months' course of lectures costing in many cases, where the young men were of limited means financially, from $300 to $500. I have known of a young man's receiving the recorded honor of "leading his class" on examinations before our state board of examiners for license to practice medicine whose actual medical college expenses amounted to only $595.50 incurred in attending two full courses of lectures and graduating. This young man had also acquired twenty-seven standard volumes of medical literature, at a net cost to him of $146.

But our country was growing wealthier, our loved Southland was recovering its former prestige and strength, standards of every kind were being raised, and the men of our profession were in no respect laggards in joining in the uplift cry, with the net result that very soon the standards of medical education were going upward by literal leaps and bounds. First came the increase in years at college to three, later to four, and an added fifth; while at the same time, *pari passu*, the pre-educational requirements rose from no crystallized demands whatever to graduation from high school, then one, then two college years, later to an academic degree. Still the good work went steadily, if not merrily, onward and upward, until today we are perfectly safe in saying that the exactions of our profession are the most rigid of all the learned professions.

Around 165 diploma-in-medicine institutions in existence in the eighties and early nineties of the century just past have shrunk to some sixty. Students spent much time in laboratories delving in more or less intricate chemical and microscopic procedures, soon to be largely forgotten, in major part at least, when later confronting the serious, practical side of relieving human suffering and delaying the advance of death; collateral studies were added to the medical college curriculum, and various gradings and elaborations in the courses of medical college instruction have taken place, with a necessarily added tremendous increase in both knowledge acquired and cost incurred in securing the degree in medicine and license to practice. During this same period of time, as a corollary, perhaps, possibly as a more or less normal reaction to this very proper advance of the standards of regular medicine, no less than six more or less distinct varieties of "cults" have appeared on the medical horizon, and while denied recognition in some states, have secured legal status as practitioners of the healing art in various other states of this Union. Personally I am profoundly appreciative and cor-

dially approve of the net results accruing to the medical profession and to the cause of better therapy of disease. As medicine has advanced, so also has the influence of the men of our profession increased and their usefulness and prestige enhanced. While this is true, it is just as well that we take cognizance, at this time in the historical development of medical affairs, that our possible future progress is seriously menaced by the suggestions made only very recently from a very high official source (no less a personage than the president-elect of our great national medical organization) to the effect that we probably should arrange for the development of a less highly educated and finished product of medical training to care for the citizenry of the remoter rural districts; fear being manifested, as shown by recent economic studies had, that the physician of modern training is deserting the country places, which are said to be in imminent danger of becoming without medical practitioners.

Now it is quite evident that much of this variety of talk sounds very real, and it is admittedly a fact that the present trend of medical men is to follow identically the same economic influences which are also carrying each year to the cities and larger towns of the land an increasingly larger portion of our rural population in general. Though this may be true, there should be an earnest and determined protest from every doctor of medicine who loves and respects his profession, who appreciates the advantages, alike to profession and to people, accruing from our present high admission standards, against any and every effort looking toward lessening either the preliminary educational requirements to enter upon the study of medicine, or the time spent in actual college and hospital work before acquiring the degree and the right to practice. This suggestion, despite its coming from "one clothed with authority" (for the time being at least) deserves to be promptly repudiated by the organized profession everywhere, and to be taken note of otherwise as only a passing incident in the history of medical progress.

Even though, admittedly, there does exist at the present a tendency to over-supply the cities with medical men at the possible expense of a lessened rural supply, inevitably the swing of the pendulum will come back, in part at least. The improvement of our highways and means of transportation makes perfectly feasible the transfer of the immense majority of the physicians to the urban places, yet leaving the rural districts far better cared for in the matter of medical and surgical service than a previous generation with more country practitioners.

The growth of the sentiment for the building of local county and municipal hospitals, community owned and controlled, throughout the state and nation, which is now achieving an impetus which in the next few years will carry forward at a tremendous pace—this, and other influences, may be expected to adjust this apparently disturbed phase of our medical economic life satisfactorily, and

without our ever giving serious consideration for a moment to the proposition to reduce the standards which have taken so much of earnest effort and time to raise to their present status. But rather should we, holding firmly to the established high standards, and believing our humblest citizen, regardless of where he resides, entitled to share with other citizens in as good care when ill as modern knowledge has made possible for any to have, seek to find measures and means to improve the present rural practitioners, and to constantly influence the interest of a sufficiency of young, capable, educated men to engage in the study of medicine, in order that the ranks may be kept reasonably well filled at all times.

In this connection, interested, as the gentlemen in this section are, in the vital question of the Army of the United States building and fostering from among the best of our younger physicians and surgeons a sufficient number of medical officers to meet any emergency, it is a real pleasure to note that the definitely fixed and apparently now well established policy of the Federal Government, in developing and maintaining, in a number of the best medical colleges of the country, medical reserve corps units, is admirably calculated to afford material aid to many young men in securing their education in medicine. Though conceived for the very vital purpose of filling the medical reserve corps of the Army, the medical units are most helpful to the members of the corps.

Those who have given careful thought and study to the matter of military preparedness in our country have for many years been convinced that we have been derelict in not being better prepared to resist an attack from any source, but until the outbreak in 1914 of the World War efforts to secure proper action proved futile. The interest and concern then aroused in our people speedily brought in 1916 the enactment of the National Defense Act, authorizing the creation of the officers' reserve corps along lines which, as the results attained have shown, naturally made the corps a great national asset.

Coupled with the Act of 1916 was provision for the R. O. T. C., which, however, did not have time to function to the desired degree ere America was caught and carried into the maelstrom of earth-wide activity. Following the Armistice, the R. O. T. C. movement grew rapidly, though restricted in its functioning as a preparatory school for officers of the line only, the professional groups being for practical purposes almost excluded until the Re-organization Act of June 4, 1920, when provision was made for the medical and other professional groups. This latter act recognizes the fact that students engaging upon the study of medicine have already received academic training and are therefore better prepared to assimilate special training, and the time for medical students was cut from 150 hours per college year to 90, thus crediting the young to-be Aesculapian with 40 per cent increased assimilative capacity over the line service. It is to be remembered, however, that in the developing of the line officer his academic studies possess only a relative

bearing on his duties as an army officer of infantry, cavalry, or artillery, while, in the growing of the man of medicine, every possible item in his professional course of study is calculated to have more or less intrinsic value in preparing him for the duties of medical officer, for the principles of medical or surgical practice are the same in the main, whether in civil or military line of the doctor's duty. Hence the wisdom of the apparent concession is easily seen.

The work of the R. O. T. C. is divided alike in the summer schools, as in the medical and other professional schools, into basic and advanced courses. With the medical unit detailed in the schools of medicine only lectures, demonstrations and classroom exercises are given, reserving the purely military side of the subjects for the summer camp. Two years are given to the basic course and two to the advanced course, in medical schools, thus affording to each year of the medical student's course a taste of military medical education.

It is strongly recommended that medical students taking in their professional school years the R. O. T. C. unit work, attend, in the summer, the training camp, which is at Federal expense, including uniforms, equipment, travel, pay, and subsistence. At the medical college, in the two basic courses, the student's freshman and sophomore medical years, there is no pay provided, but during the last two college years allowance is made to medical students taking the course of commutation of subsistence; or, in other words, medical students, when securing their four years of medical college education, may, if desired, assume in addition the work of the R. O. T. Corps, if attending a school of medicine to which the U. S. Army has attached a military medical unit of instruction, and receive during the junior and senior college years from the Federal Government the money value of the regular rations supplied to soldiers of the regular Army. This, while not a large sum, is an item worthy of the student's consideration when essaying the long and expensive course leading to his degree of M. D. In the summer camps medical students also receive soldier's pay. In addition to the compensation in cash, there is the opportunity of receiving a degree of training that only those of us who went to military camps in 1917 and 1918, without previous knowledge of matters military, or those similarly unfitted to come after us in a future emergency, can fully appreciate. The work now being done by the R. O. T. C. would indeed have been a Godsend to the majority of us, but we received what is now being provided by an intelligently directed government to medical students during their college course only after induction into the service and arrival in camp. In the coming years, when our forces are mobilized, how vastly different when we have the full complement of medical reserves available for active duty. No lengthy stay in camps and training centres, only a shorter stay to renew again what one had already learned, and each medical man would soon be properly fitted for his place in the machine.

I need not record here the belief current among medical officers that military training improves the physique, health, appearance, and morale of man, and that he should become a fitter citizen for having had the experience.

At the present time the Army has medical officers on duty with units for medical training functioning in no less than twenty-four of the leading Class A medical schools of our country. There is a waiting list of exactly one-half as many more medical colleges desiring Federal establishment of medical R. O. T. C. courses, but the existing facilities and finances are completely exhausted for this year. Another year it is hoped to be able to accommodate these and others wishing to afford their students in medicine this added opportunity for professional development and advancement. Among the twenty-four medical colleges now giving R. O. T. C. courses are Harvard, University of New York and Bellevue, Cornell, University of Pennsylvania, Rush, Vanderbilt University, Medical College of Virginia, Washington University, and St. Louis University, which, with others, have enrolled around 3500 students in different year courses. Of this number approximately 500 will be available, when graduating at the approaching medical commencements, to receive, along with their diplomas in medicine, commissions as lieutenants in the medical corps of the Army of the United States.

In addition, eight schools of dentistry and four of veterinary medicine are also giving R. O. T. C. courses with relatively equally creditable showing.

May I, in conclusion, be permitted to quote the words of our recent great commander, General John J. Pershing? In a communication only a few months since to the Medical Club of Philadelphia, General Pershing said:

"Your profession has ever rendered unselfish service to the cause of humanity. In peace and in war our medical men have shown their loyalty and devotion to country. The sacrifices you have made in the interest of science and humanity have marked you as men of courage, with a fine sense of loyal citizenship.

Through the indefatigable efforts of leaders in the study of the prevention of disease, the usual camp diseases, typhoid fever, infectious diarheas, malaria and yellow fever, formerly the greatest hazards of military operations, have been reduced to insignificant concern. These conquests of yours have in general stimulated the industrial progress of tropical countries, and in particular have removed the barrier to the consummation of one of the greatest engineering accomplishments of all times. The mobilization for the World War gave practical evidence of the control which principles of preventive medicine have made possible.

These achievements prepare you for your intimate conception of the preparedness program under our military policy. The events leading to our participation in the World War have rapidly become dim in memory, but I know you will recall the precipitate way in which we mobilized and organized our forces to play their surpassingly brilliant part in the final defeat of the Central Powers. America added new blood, which, like old wine, exhilarated the forces of our allies and gave the final blow to our mutual enemy and a glorious victory for the right. Our traditional lack of plans for the defense of our country and the principles

for which its people have always stood resulted in an unnecessary cost in lives and money. But I believe the lesson has been learned. Congress has, by the Act of June 4, 1920, provided for the organization of a truly effective citizen army, to be developed in time of peace for the undesired event of war.

Your profession has always been ready and willing to fulfil the citizen's obligation for the defense of the country, as proved by your eager response in the World War, in which your accomplishments reflected the highest credit on your personnel. The first active participation of the United States after the declaration of war was the assignment to active duty with the British in May and June, 1917, of some 800 young American physicians, who volunteered their services immediately after we cast our lot with the Allies. These men were assigned to front line work, where they 'carried on' with rare devotion to duty and to the credit of the nation.''

(Parenthetically, gentlemen, may I be permitted to observe and record here that Dr. (then Captain) William Pinckney Herbert, Asheville, N. C., was a member of this force thus commended by the Commander-in-Chief? He is continuing his army connection through his present commission as lieutenant-colonel in the medical corps.)

Continuing, General Pershing said:

''Your response to the country's need resulted in the development of a large and efficient machine composed of about 35,000 officers, and more than 250,000 men, who contributed vastly to the ultimate success of American arms.

The advantage of organization for any service is indispensable. You have recognized that by the establishment of your great American Medical Association. Peace-time organization of the medical profession lends itself admirably to assimilation, in the event of emergency, under the National Defense Policy.

Your service is a two-fold one; (1.) As leaders in your community, having expert knowledge of the benefits of physical development, leadership, and discipline afforded by military training, you are better qualified than any other group of men to keep before our citizens the importance of their support of the principles of defense. (2.) As potential members of the medical service of the Army of the United States, knowing the inestimable value of adequate organization in time of peace for service in emergency, you can make possible the development of an harmonious and efficient machine ready for service without tedious delays.

You know, perhaps better than any other class of men, the advantage of these basic principles. You can therefore, because of this broadness of view your life work inculcates, appreciate the importance of an adequate military organization so developed in time of peace as to assure the protection of the country.

The medical history of the World War made by your profession is one of bright achievement, but the task is unfinished. The nation having provided a policy for the creation of a citizen army, your obligation to aid in the fulfilment of the wise provision is obvious. The nation has confidence in you, and I feel assured that the organization of the medical service for future emergencies will not fail.''

Gentlemen of the section of Medical Veterans of the World War and Medical Officers' Reserve Corps of the Army of the United States, I trust I may ask that, other things being equal, you kindly

lend your helping hand in securing, when occasion and opportunity offers, the attendance of the young men studying medicine with whom you come in contact, on medical schools with functioning units of the R. O. T. C., thereby helping the young men, helping the profession of medicine, helping the national cause of preparedness, and helping promote a cause that I believe is near and dear to us—the advancement of the best interests of the Army of the United States.

Col. John W. MacConnell, M. D., Davidson, was nominated for appointment as chairman of the section.

A unanimous rising vote of thanks was extended to Dr. Osnato for his valuable and interesting address.

Colonel J. Howell Way, Waynesville: With your permission, Colonel Dunn, I wish to offer a motion that the compliments of this section be extended through Colonel Dunn, its presiding officer, to Surgeon General Ireland, with our most sincere thanks and appreciation of the distinguished courtesy which he has so graciously extended this section and North Carolina by honoring us with the presence of Major Jones.

I move, sir, the adoption of that motion.

Dr. Long: It gives me great pleasure to second the very graceful and oratorical motion introduced by Colonel Way.

The motion was carried unanimously.

Col. Dunn, Chairman: Major Jones, will you extend to the Surgeon General our greetings, if possible in the language used by Colonel Way?

Major Jones: I will endeavor to do so, sir.

(Note: The following letter of acknowledgment was received from the Surgeon General.)

WAR DEPARTMENT
OFFICE OF THE SURGEON GENERAL
WASHINGTON

May 2, 1925.

The Chairman,
Medical Veterans and Reserve Officers' Section of the
North Carolina Medical Society.

I appreciate the honor and gracious compliment which your section paid me at your annual meeting April 29th at Pinehurst, in the resolution conveying the felicitations of your membership.

I have been informed of the interesting program which engaged the attention of your section and have learned of the splendid progress which is being made by the reserve officers in preparation for their duties as officers if called to active duty in emergency.

I congratulate you upon your progress and hope that each succeeding year may find your enrollment increased and your interest unabated in the fulfillment of your military obligation as citizens.

Very truly yours,

The Surgeon General,
M. W. IRELAND,
Major General.

Col. Wm. L. Dunn,
Asheville, N. C.

SECTION ON EYE, EAR, NOSE AND THROAT

CHAIRMAN: HENRY L. SLOAN, A. B., M. D., CHARLOTTE

CHAIRMAN'S ADDRESS:

SAFEGUARDS TO CATARACT EXTRACTION

The extraction of senile cataract is by and large the most important operation that the ophthalmic surgeon is called upon to do. It is fraught with many difficulties and many chances of disaster. In fact, intraocular surgery as a whole constitutes one of the most delicate branches of surgery. It is a responsibility not to be taken lightly, or attempted except by one experienced in ophthalmic surgery. Even the slightest disregard in the preoperative care, technique of operation, or in the after treatment, may prove fatal to recovery of useful vision. While the outcome in the average case shows fair results, yet it is not putting it too strongly to say that, with proper care, almost every uncomplicated cataract should be treated surgically with the restoration of useful vision.

It is with the hope of stimulating a deeper interest in this important subject that I have decided to address a few remarks, in the light of present day knowledge and experience, on this important aspect of our specialty.

In a broad, general way a definite plan of procedure should be followed from the time the cataract patient consults us. And let me digress here to say that it is unwise to tell patients with slight lenticular opacities that they have cataracts. Many such never go on to maturity, and a smaller number may never progress to the point of interfering with useful vision. Do not use the word "cataract" for such changes. Tell them, if you wish, that there are slight lenticular opacities and let it go at that. Thereby you tell the truth and save your patient much needless worry.

When the time has come for surgical intervention, then tell your patient the trouble and assure him that he should recover useful vision. Be cheerful about it, so that he may approach with confidence what for him is a great ordeal. Cheerfulness and tactful care are very useful in the management of these old people, who are subject to frequent mental disturbances and often to a frenzied psychosis. Such a contingency must never be lost sight of, for many eyes are destroyed by carelessness on the part of the attending oculist in this regard. Moreover, the patient should spend the day and the night before operation in the hospital, so that he may familiarize himself with the strange environment. Some responsible member of the family should go to the hospital with the patient and remain with him as much as possible. In my hands, a familiar voice has done more to prevent and to control these cases of postoperative mania than all the sedatives and hypnotics available. Postoperative delirium following cataract extraction is no myth.

It has been reported as a complication in as high as two per cent of the cases,.

The condition of the patient's health should be known. A careful, systematic examination should be made, and any ailment should be corrected when possible. This certainly helps us in many ways, too obvious to enumerate. Diabetic patients have their cataracts removed with greater hope of success since the discovery of insulin. Operation in the presence of untreated syphilis is to invite an unsuccessful result, if not a disastrous one.

When to operate: Age is no contraindication to the extraction of cataract. The general health of the patient is the important factor. I have myself operated on two men ninety years of age, with the recovery of useful vision. Convalescence in both cases was uneventful. In sclerosing lenses, when the vision has failed to 20/200 (6/60), or what is considered no longer useful vision, the cataract should be removed. What shall we advise in case of a mature cataract in one eye and good vision in the other? We are advised on the best of authority to operate. Certainly operation is to be done at once when there are beginning signs of hypermaturity, such as thickening of the lens capsule and other changes indicating this condition. The slit-lamp is of great help in this connection. Hypermature lenses are extracted with greater difficulty, and their extraction is attended with many complications. It is true that such a patient will not be able to wear his phakic and aphakic lenses, and he may have for a while an annoying diplopia. However, the latter soon passes away, and the increase in the visual field and the consciousness of a good eye in reserve more than compensate for the disadvantages. We have no less authority for such advice than that of J. Herbert Parsons and Meller.

Shall we do a preliminary iridectomy? As a routine procedure, I believe that it is the opinion of the majority of present day ophthalmologists that it is unnecessary. In my own practice I do a preliminary iridectomy in some complicated cases (not in all), and in extremely nervous patients. I recall particularly a woman patient who was frightened almost out of her wits, on whom I did a preliminary iridectomy. She was so frightened she could not be still on the table. When she came later for extraction she was as much composed as any patient. In my hands, as a method of hastening maturity, the preliminary iridectomy has been of little avail.

Bacteriology of the Eye: The average clean-looking eye will stand operation without infection. However, a microscopic examination of the conjunctival smear should be made in every case. It is decidedly safer to make a culture from the conjunctiva as a routine. The presence of the xerosis bacillus and the staphylococci in the culture need not be a bar to operation. If more virulent organisms are found the conjunctival cul-de-sac must be freed of them before surgery is undertaken. The lacrimal sac must be carefully examined. If chronic infection is present it must be extirpated and the conjunctival membranes cleared up before any intraocular sur-

gery is undertaken. Operation on one eye should not be done if there is an acute infection in the other eye.

I believe also that a badly diseased mouth should be treated, as a preoperative measure, for thereby many postoperative endogenous infections are eliminated. Empyema of the nasal accessory sinuses should be cleared up in the same way.

As a special precaution, be on your guard against the so-called cases of "quiet uveitis."

Good anesthesia is a *sine qua non* of successful cataract extraction. In addition to the use of 4 per cent cocain by drops on the conjunctiva, I feel that 2 per cent procain should be injected either subconjunctivally or deeply in the orbit. There are responsible advocates of both methods. Here I wish to call attention to the Van Lint-Rochat method of paralyzing the orbicularis palpebrarum. It consists of injecting about 4 c.c. of a 1 per cent or 2 per cent solution of procain, one-half above and one-half below, deeply along the orbital margins. In about ten to twelve minutes the orbicularis becomes powerless, and in my hands this has been a great boon and has relieved me of all fear of "squeezing" during operation. This procedure is seldom accompanied by any drawback, and I feel sure that any oculist who learns the use of it will never give it up. It constitutes, to my mind, by far the greatest addition in recent years to the technic of cataract extraction.

We should always strive for a good conjunctival flap. This assures rapid closure and healing of the wound, and insures to a large degree against infection. Finally, a good assistant, who knows how to keep quiet and to do his part well, is a great safeguard in this work. Quiet in the operating room is almost essential. Nobody but the operator should speak to the patient.

Many good ophthalmologists advocate the closure of the wound with a suture. There are a few who use it routinely. Derby, of Boston, uses it in selected cases. He prefers the mattress suture, as advised by Verhoff. This subject has been fully discussed in recent American ophthalmic literature, notably by Conrad Berens, of New York; Harvey J. Howard, of the Rockefeller School in Peking, China; Ellett, of Memphis, and others. Most of us would agree that it is almost necessary in certain complicated cases. The advocates of the suture in this connection are gaining ground; the trend is toward a more general use of the suture.

Both eyes should be closed and protected by a shield. The unoperated eye may be uncovered on the second day. The patient should be gotten out of bed as soon as possible, in order to protect him against the danger of hypostatic pneumonia. The same is true in asthma patients, etc. Whenever possible, a graduate nurse, specially trained in this work, should be in attendance at all times.

I have not attempted to cover this important subject in a detailed way. Rather I have tried in a broad way to indicate some of the safeguards in this field. The ophthalmologist probably gets more satisfaction out of successful cataract surgery than any other

part of his work. Surely the *tactus eruditus* is called for in all intraocular surgery; but more especially in the extraction of cataracts. Anyone who has had the privilege of working with the masters in this field can easily appreciate and hail with delight the wonderful skill of their work. We should strive for a perfect result in every case; we shall more nearly approach this ideal just so soon as we make intelligent use of the modern aids to cataract extraction.

A RADICAL OPERATION FOR THE CURE OF CHRONIC FRONTAL SINUSITIS

J. B. Wright, M. D., F. A. C. S., Raleigh

There is perhaps a greater percentage of failure to permanently cure frontal sinus disease than disease of any other sinus of the nose. I am frank to admit I had never had a satisfactory cure before I tried the method outlined in this paper. The advantages claimed are, briefly, its simplicity; the ease with which the after-treatment can be almost indefinitely kept up; the incision above and the opening into the nasal cavity below, being on a straight line, make it easy to pack the cavity and keep open the nasal opening at the same time. There is no trauma to the eye muscles, the supra-orbital nerve, or the blood vessels of the orbital region. There is very little scar, with no sinking of the skin of the forehead.

The operation can be done with either a general or local anesthesia. The three operations I have done have been with local anesthesia. The nose is thoroughly cocainized, as though an exenteration of the ethmoids were to be done. The skin, at the point where the incision is to be made, is then injected with a one-half of one per cent novocain solution to which a few drops of adrenalin chloride have been added. At the upper part of the sinus a vertical incision about an inch long is made, cutting through skin and periosteum. The opening is made similar to that of a mastoid, laying bare the bone. A hand bone drill is used to bore a small hole into the frontal sinus, and this is enlarged with either a chisel or a bone curet until it is large enough to get a small ronguer forceps in the opening. Then the bone is easily bitten away until a hole as large as desired is obtained. The granulations and debris are thoroughly but gently removed, leaving as much mucosa as possible undamaged. After all debris is cleaned out, an opening into the nose is the next step. This is not attempted until the middle turbinate and enough of the ethmoids are removed to give plenty of room for a large opening into the sinus. With good illumination the site of the nasal opening from the sinus can be seen. This is used as a guide and a probe is (with very little force) passed from the sinus into the nasal cavity. The passage is then enlarged both ways with rasps, care being used not to break into the orbit or backwerd into the crista galli. The sinus is then packed with small tape, always going through into the nasal cavity with the first part of the tape and then gently packing the entire cavity of the sinus. The wound is then closed with a strip of adhesive. The next day the adhesive is

removed and the packing taken out through the nose, repacking as before. This is kept up daily until the mucosa lining the cavity is in a healthy condition—then the packing is discontinued and the wound allowed to heal. I then irrigate the sinus through the nasal opening until all discharge stops. The three cases I have treated as above autlined are my only cures.

DISCUSSION

Dr. James P. Matheson, Charlotte: I enjoyed Dr. Wright's paper. There are quite a number of problems that present themselves and are suggested by this paper. I noticed in the sinuses that he opened up and did not find pus he did not have a lateral X-Ray view. All his plates were taken antero-posteriorly only. It occurs to me that probably some of the conditions presented would have been cleared up if he had had a lateral view taken of his sinuses.

In his last case I would like to ask Dr. Wright just how much intranasal surgery was done before operating on the frontal bone; also, was this case an acute one. Experience in our clinic has shown that practically all cases of acute frontal sinusitis get well with proper treatment, and if it is a chronic frontal sinustis we do not expect them to get well unless a really radical operation is done.

We find that a large percent of our cases will get well under an ordinary plan of irrigation, except those that have chronic ethmoid infections, polyp formation, or are due to bad teeth. In these conditions we pursue the radical course; first radical ethmoid and sphenoid, followed with radical antrum.

Dr. H. C. Willis, Wilson: With reference to Dr. Wright's paper I must admit that I enjoyed every feature of it, owing principally to the easy manner in which he takes care of his frontal sinus cases. His cases must have been of the acute type, as in the chronic type, where you have a polypoid degeneration, even though you have an acute exacerbation on top of that, I do not believe that one can clean out in a thorough manner through this incision which he places such stress upon. The one outstanding feature in sinus surgery is that unless you do it radically you will be confronted with an oft repeated expression, "Once a sinus, always a sinus."

I wish to thank Dr. Wright for his paper, and, as I stated before, I enjoyed it more than a little.

Dr. V. K. Hart, Statesville: I am very happy to hear what Dr. Matheson has to say about the acute sinus. I have seen a great deal of radical work; in fact I worked under one of the most radical men in this country. I have seen a great many frontal sinuses filled with pus clear up under conservative intra-nasal operative treatment.

I, too, should like to hear the question discussed as to when a radical frontal is indicated and when it is not indicated. I should also like to hear Dr. Wright tell us a little bit more about the post-operative treatment. I note that he packed the wound. I have seen cases treated by inserting a rubber tube through the nasal open-

ing after the opening has been made in the sinus, and the rubber tube kept in place through the opening from the nose into the frontal sinus. The external wound was always closed.

It seems to me a point worth noting, as I believe has also been brought out, that an antrum will not clear up as long as you have a persistent frontal sinus draining, and perhaps the pus being thrown over right through the antrum opening.

The more I see of this work the more disinclined I am to do radical operative work, and I should certainly like to hear the matter discussed a little more.

Dr. John G. Murphy, Wilmington: I think the place to do the radical work is intranasally. In my experience, practically all of these cases will clear up if the radical work is done intranasally. I think there is where we have fallen down and let so many of these cases go on to a radical operation—the fact that we were not radical enough in our initial operation.

The question has been raised as to when to do a radical operation. I have always tried to avoid a radical operation by first trying to clear them up intranasally. If you are radical enough in intranasal work, you have few radicals—I mean radical frontal or radical antrum operations.

Most of these acute cases clear up with treatment. There are some that will not clear up, there are some that will not clear up with intranasal work, and then is the time to do a radical operation. One of the speakers has already brought out (Dr. Willis, I believe) that the work must be radical. There is where the x-ray helps us out so much. You must know by your x-ray just how far to go.

If we are radical enough in our operation I don't think we have to pay much attention to the dressings afterward, or the irrigation. It is surgery applied to the nose, and of course we don't depend so much upon irrigation and packing in general surgery, and that applies to surgery in the nose.

Dr. Wright, closing the discussion: I am sorry I left the impression that these were all chronic cases. I didn't intend it. I mentioned four or five that were chronic, but the thing I wanted to bring before the section was that I think it is a parody on our diagnostic ability to stick a cannula into every sinus whenever some one comes in suffering with a headache or giving these symptoms. I would like for us, as best we can, to use our physical findings, our transillumination, our horse sense, and what we get from the x-ray, to let these patients know that they have come to one who is capable of giving them intelligent advice and giving them relief.

In regard to the operation I have done on three cases for radical frontal: of course this is not done until there is an exenteration of the ethmoid cells with proper drainage, provided you can get this drainage through the nose. This patient had profuse discharge, as well as the two others I have operated on. As I stated, while the picture was on the screen, this radical was not done until after the antra and all these others had cleared up. Then, of course,

I knew that there was involvement there of the mucosa which was never going to get well without surgical help.

In regard to what Dr. Matheson said in regard to polypus and pus: there never has been any polypus in a sinus that there was not pus. So I could just as well have said, for Dr. Matheson's benefit, that no polypus was found, but most of these were done by irrigation and not by radical operation to find out what was in the sinus.

DR. MATHESON: That point ought to be determined before you operate.

DR. WRIGHT: That is correct. I shall be perfectly frank with this section and say that I feel bad when I tell a patient that I believe the sinus ought to be punctured and irrigated, and then look at some clear water in the basin again. That is why I wanted these things brought out, that we all might, from our discussion and exchange of experience, be better diagnoticians.

Dr. Willis's question was answered, because there were only four or five of these cases that were chronic. All the others were acute.

In regard to the postoperative treatment: I disagree very much with Dr. Murphy in regard to that, because I am satisfied that if we do not assist nature the same old hounds will come right back on our trail, and we shall have a sinus filled up again with unhealthy granulations and debris that will soon be just as bad as before, if we do not keep it packed and do not keep it cleared out and so assist nature in getting this cavity relined with a healthy mucosa.

In doing this frontal operation—I have done only three—you have direct inspection, you do away with all of the damage to the blood vessels, nerves, the orbit and everything around it. You go above where there is no structure and where it is close in. You have your picture to show you just exactly where. You are not taking anything for granted. You are absolutely sure of your position.

If you have ever done a radical Killian operation and then tried to dress that wound afterwards, it is a pitiful proposition to come in at one angle and then start at another, or to go up through the nose and try to keep it open when it swells up, and then is the time granulations begin to come back.

If you haven't this opening above and in a direct route so that you have no packing around your elbow, as it were, it is a very difficult proposition. This other is simple and safe and practical, and there is no danger, you know where you are, you have got your anatomy from below and above.

When you have this opening above here and it is cleaned out, you see where the proper position for the connection with the frontal sinus and the nasal cavity is, and you pass a probe or a rasp through and make it as large as the anatomy will allow you to make it. In that case I could have put a lead pencil in the cavity. In others the bony arch of the nose will not allow that much space between the nose in front and the orbit on the side. You pack it,

or if you want to leave it to luck to see whether lymphoid tissue and granulations will form back in a few months, you will have what I have always had with the old Killian—another discharge from the sinus. If you want to do that, all right, but I prefer to pack them, I have splendid results with the three cases that I have done, and I feel very grateful. In the future I hope to report again, with a larger number of cases, as to the results. (Applause.)

SIMPLE MASTOID WITH SINUS THROMBOSIS AND BRAIN ABSCESS AS COMPLICATIONS

Harry C. Willis, M. D., Wilson

Patient: L. M. (child), 37 months of age. Colored.

C. C.: Generalized headache, with serous discharge from right ear for fourteen months.

F. H.: No brothers or sisters; father and mother living and in good health.

P. H.: Scarlet fever at two years of age, at which time developed an acute right ear, which has discharged at intervals since.

P. I.: Began three and a half months ago with a localized pain over the right Zygomatic area, dull and constant, followed by temperature of about 101 and a rapid pulse, with profuse sweating and, at irregular intervals, hot flashes and chilly sensations. A profuse discharge from the right canal was noted about this time, with an offensive odor; some nausea, and vomiting followed by marked drowsiness, but easily aroused.

Malaria and typhoid was suggested by the family physician and treatment for these was instituted and followed for close on to a month, when the patient began to have a generalized headache, with definite vertigo, distressing nausea and vomiting, and drowsiness growing more and more pronounced. The headache began to take on a different angle in that every night, about twelve o'clock, a most intense pain would begin right in the frontal region and nowhere else, lasting for about two hours, with profuse sweating and hot flashes, the temperature never getting above 101½. The vomiting was getting to be a serious feature in that the child could not retain any food and was losing weight very fast, yet it was in very fair condition in view of the duration of the illness.

One very unusual feature was noted, in that the patient would have profuse sweating every afternoon. Between four and six, for five days prior to operation, following the sweat, she would become very hungry, and this was the only time she ever asked for anything to eat. The mentality was good except when the intense frontal headache would begin; then she would go in an uncontrollable state and have to be held with a great deal of effort.

This is the picture given me by fairly intelligent people of their race.

Examination: Patient observed to hold her head to the right, and seemed fairly comfortable. Temperature 101; pulse 86; respiration 26, slightly drowsy, pupils dilated; some slight photophobia. Right fundus, vessels distorted and disc choked about two diopters; left fundus apparently negative. No nystagmus; slight pareses of the right sixth; reflexes did not show any disturbance. Patient was right-handed, and speech was clear and without effort; cranials were good except as mentioned. An x-ray was not obtainable.

Nose and throat showed nothing remarkable; no edema or thickening over the cortex of either mastoids could be made out; definite tenderness was elicited

by deep pressure over the Zygomatic region and sinus of the right, and these two points were the only ones to furnish anything at all suggestive. Blood culture not obtainable; Wassermann negative.

I might say that the left ear was entirely negative, but the right canal was oedematous along the posterior wall to the margin of the drum for half an inch; the drum had a nipple perforation with a fair amount of offensive seropus.

Lumbar puncture was done, showing clear fluid without apparent pressure, which contained four cells; white blood count was 16,000; urine had faint trace of albumen, no cast, faint trace of indican.

The Diagnoses was Mastoiditis, with Sinus thrombosis. A mastoid was done; cortex was found very thick, smooth, and no evidence of extension therein; cortex removed with chisel, and found very hard, and all of the cells were broken down and in a sea of pus; sinus was well anterior, and mastoid was unusually deep. It was observed in cleaning out the mastoid cavity that there was a little oozing of pus from the tegmen parallel with the sinus, and on exploring this the tegmen was found to be thin and necrosed. By picking away this necrosed area, which was about the size of a penny, a definite lead was found and followed with a probe, extending a good inch in the temporo-sphenoid lobe. More of the tegmen was removed, to a little larger than a nickel, and as much as two teaspoonfuls of frank pus was obtained, after which a Mosher wire basket drain was inserted and anchored, and the drain also packed off. Now, coming back to the sinus, which was also necrosed, this was uncovered from the knee downward, finally exposing the entire surface for three-quarters of an inch; the wall was observed to be much thicker and was plainly suggestive of an involvement. I immediately went to the neck, but observed nothing in the form of a mass. A Toby incision was made in the superior carotid triangle at about the level of the thyroid cartilage, above the junction of the facial vein, and two ligatures were put around the jugular, dropping the same back without cutting, closing up the wound, and returning to the sinus, on opening it I found a small clot right at the knee. As I removed this, free bleeding was established, and it was then packed with iodoform tape.

The patient reacted nicely; in fact so well that I was slow to accept her condition. Temperature the following day was 99.2; pulse 100; W. B. C. 12,000; the third day practically the same; no real change on the fourth day; fifth day, temperature 99.4; W. B. C. 11,000; pulse 105. Sixth and seventh days, no change. Eighth day temperature 100.2; pulse 112; taking nourishment fairly well; disc right eye clearing and congestion of retinal vessels improving; vision improving; no headache. Packing in sinus loosened a little. Ninth day, slight nausea; some cough; chest examination found clear; throat clear also; abscess wound draining well, with three dressings daily. Tenth day temperature 99 flat; pulse 98; no nausea; no cough. Eleventh day, packing removed from the sinus, with no bleeding and clean and healthy appearance; small wick replaced; draining freely from abscess; sixth nerve paresis practically recovered, and patient states she can see much better out of right eye; no photophobia; no headache; taking good nourishment, etc.; bowels acting well; really gaining strength. Twelfth day, temperature flat; pulse 90; W. B. C. 9,600.

Granulations around the wire drain gave much trouble from this date on, owing to filling in the mouth of the wound, and it was necessary to frequently scrape them away so as to avoid any blocking. It was for this reason that I made it a point to dress this wound as often as three times a day.

From the fifteenth day to the twenty-ninth there was nothing of any consequence to note, just a routine, as the temperature and pulse remained around 97 and 90, respectively. The W. B. C. on the latter date was 7,000; urine negative; abscess wound had filled in with a slight herniation. Seven weeks later I did a plastic procedure and closed this over with the entire wound, and the patient has done well since with the smallest amount of deformity in the mastoid region, and a scar from ligating the jugular so slight that it would not be observed in a white child. She has good hearing and a perfect-appearing drum, with a fair light reflex. Can get stage whisper at 12 feet; Rinne positive.

DISCUSSION

Dr. R. V. Brawley, Salisbury: How old was this patient?

Dr. Willis: Thirty-seven months.

In this connection, I have been associated with about eighteen to twenty brain abscesses, and, like most human beings, I like to report good results. None of us like to report failures. I think that we fail to report bad results often enough, for if we reported more failures we should in all probability obtain better results that we feel now we are sometimes getting. A man whom you all know asked me to present a subject once, and I told him I had nothing to present. He said, "Present your failures, they will consume all the time alloted for your paper." That was a lesson to me, and I am satisfied it has been of very much benefit, in view of the fact that in handling this particular case I went back through the history of my failures and took them to heart, and in that way deviated a bit in handling this condition. Now the only thing to which I can attribute the recovery of this child is this (and it is only a peg to hang your hat on): I dressed this wound three times a day, whereas in the other cases I had observed, and in my own, there was a daily dressing of one type. I observed that the patient didn't do quite so well whenever granulations would begin to fill in around the basket drain. By cleansing that out frequently the whole mentality of the individual would be brighter the remainder of the day, and the further the patient was from the dressing of the wound the worse he appeared to look and feel. I stuck to this, religiously cleaning the wound out three times a day, I know that dressing an old abscess is nothing pleasant to look forward to for a goodly number of days, but I felt it was worth the chance, as I had never had a brain abscess get well. Having seen two or three that did, naturally I had a greater desire to accomplish something in this particular case. However, I didn't attribute the recovery of this child to anything that I personally thought of. It is simply a matter of having God with you and keeping the wound draining freely. I should like to have any suggestion from others as to what their results have been in this line of work.

MIXED OBSTRUCTIVE AND PERCEPTIVE UNILATERAL DEAFNESS

M. R. Gibson, M. D., Raleigh

Mixed deafness is that form where there is a pathological process causing both obstructive and perceptive deafness. An example of this type of deafness is found in acute otitis media from which there is a secondary inflammation of the inner ear.

The important consideration in deafness of this type is its recognition, and I shall therefore endeavor to give methods used in reaching a diagnosis. History and otoscopic findings should be the routine in all ear examinations, but the most careful history and closest examination of the ear in these cases will not reveal nearly so important findings as a thoroughly made functional hearing test. The functional hearing tests recognized by all otologists, and familiar, no doubt, to each of you, will be rehearsed at this time, and mention will be made of findings in obstructive deafness.

Air-conduction is tested by means of the voice (conversational and whispered), watch, and acoumeter or Galton whistle. It will be found that impairment of hearing is less marked for the high tones, and more pronounced for the low tones. Absolute or nearly complete deafness is never due to obstructive deafness alone. Absolute deafness may be due to disease of the perceptive apparatus alone or a combination of obstructive deafness and perceptive deafness. The Weber test lateralizes to the affected side. The greater the affection, the stronger will it lateralize, the more pronouncedly will the tuning fork be heard on that side. The Schwabach is lengthened; the patient will hear the vibrating tuning fork longer if placed on the mastoid than a normal individual will hear it if placed on his mastoid. The poorer the hearing by air-conduction, the better it will be by bone. The Rinne will be found to be negative, or the variation of the length of time the patient hears by air- and bone-conduction will at least be very much less than normal. Many cases have air- and bone-conduction of equal length, and these are recorded as Rinne plus-minus. It will be found with the stop watch that the air-conduction in these cases has been shortened and the bone-conduction has been lengthened.

Changes in functional test findings will be noted in cases that improve or grow worse. One who was found to have a Rinne plus-minus upon first examination may, under proper treatment, improve, and upon later examination will have a longer air- and shorter bone-conduction than previously, and therefore a positive Rinne, and a better hearing ear. One who has not improved, but has grown worse, will be found to have a shorter air- and longer bone-conduction than previously, and therefore a minus Rinne. These findings are typical of the uncomplicated obstructive deafness cases.

I shall now refer briefly to the typical findings in unilateral deafness due to disease of the perceptive apparatus, without any obstructive deafness. Ascertain the impairment of hearing by air in the same manner as referred to in obstructive deafness, by use of the voice,

conversational and whispered, acoumeter, and Galton whistle. There is no more impairment of hearing for high than for low tones in deafness due to disease of the perceptive apparatus. There is approximately an equal loss for all tones. One of the distinguishing features of differentiation of perceptive and obstructive deafness is that in obstructive deafness the loss of hearing for high tones is not noticeable, while in perceptive deafness there is loss of hearing for high tones as well as low tones. The Weber test lateralizes to the normal or better ear, in perceptive deafness, and the more pronounced the involvement the more strongly will the sound he lateralized to the good ear. The Schwabach is shortened on the diseased side; the patient fails to hear it as long as the examiner or the control.

The Rinne for all unilateral cases of nerve deafness, except the most pronounced, will be found to be positive; in the more pronounced it may be plus-minus.

The findings in our functional tests are often such as to prevent us from classifying the case examined as one either of obstructive deafness or deafness due to disease of the perceptive apparatus These cases form a group of their own, mixed deafness, and it is of this type I shall now speak. In this type of deafness we find the usual findings of obstructive deafness, which we shall assume to be middle ear catarrh with poor hearing by air-conduction and a proportionate improvement of hearing by bone-conduction; Schwabach very much lengthened and Rinne decidedly negative, with Weber lateralized to the poorly hearing ear. Upon a later examination the same patient reports that hearing has grown very much worse; functional tests show a shorter air-conduction than previously, but bone-conduction or Schwabach the same or practically the same as normal. During the period between examinations both the air- and the bone-conduction have shortened and the Rinne remains negative. Since the Rinne is negative we think of obstructive deafness, but in this type we should have a lengthened bone-conduction. As now the bone-conduction is not lengthened, it cannot be an uncomplicated obstructive deafness; nor can it be an uncomplicated nerve deafness, because the bone-conduction is normal in length and not short, as is the case in nerve deafness. This, then, must be a case of obstructive and perceptive deafness, and therefore a case of mixed deafness. The case as presented was first one of middle ear catarrh, later developing an inner ear or nerve deafness.

After making our functional tests they are recorded, and then the diagnosis is read from the findings as recorded. In the hypothetical case just referred to, the diagnosis would be middle ear obstructive deafness, followed later by an inner ear involvment, either as a secondary or an independent cause. Whether a secondary or an independent inner ear condition has arisen after the primary obstructive deafness must be decided by additional factors. If the first condition is purely one of catarrhal infection it would not be expected that the inner ear condition would be one of labyrinthine

suppuration, but if it were an acute suppuration of the middle ear then the cause of the sudden abrupt change in hearing might be due to a secondary labyrinthine suppuration. If, though the original condition was one of chronic middle ear catarrh, a more pronounced loss of hearing later developing, the second condition would more likely be one of syphilis or focal infection affecting the inner ear. This being true, the patient would have two distinct diseased conditions of the same ear.

Suppose our patient was not seen until after he had suffered from both the middle ear catarrh and the inner ear condition. In this case the otoscope would show retracted and opaque ear drum, and negative Rinne of marked degree would be found. This case, without further examination, would naturally be diagnosed chronic middle ear catarrh of severe type. In case, though, further and closer examination is made, using the stop-watch to time the air- and bone-conduction, it will be found that the bone-conduction is not long enough for an uncomplicated case of obstructive deafness, and it therefore must be one of the mixed forms of deafness. The next and very important consideration is to determine which condition, the chronic middle ear catarrh or the affection of the inner ear, is the most recent, and in this we shall be helped immensely by taking careful and full histories of the case and making thorough study of the otoscopic findings. Much better results will be obtained by treating the most recent condition first, whether it be the catarrh or the syphilis. Much valuable time may be lost by treating the old chronic condition in mixed deafness rather than the more recent affection.

In closing my paper I wish to leave this impression with each of you. There is no reason why one who has suffered from a catarrhal deafness since childhood should not be expected to develop syphilis or some other condition affecting the inner ear, the same as one with a perfectly normal ear, but in reality there is more reason why the diseased ear would be attacked, on account of the lack of resistance. The diseased inner ear could also as easily suffer from some form of obstructive deafness.

DISCUSSION

Dr. V. K. Hart, Statesville: I should like to know what Dr. Gibson means by a Rinne plus-minus.

Dr. J. W. MacConnell, Davidson: Anybody who has the time and patience to work with deaf people deserves great credit. (Applause).

Those of us who have read Dr. Harris P. Mosher's recent article in reference to the failures in otolaryngology remember that there is one thing that we fail to do—that is to treat deaf people properly, to give them the amount of time and patience they require and then to work out their cases in detail.

I think a paper like Dr. Gibson's is a very difficult paper to listen to, if the doctor will pardon me for criticising his paper, be-

cause it is a paper that debates the differential diagnosis, one side or the other, whether it is an obstructive deafness, etc. That kind of a paper should be mimeographed and distributed, as they do in the A. M. A. Section, for the reason, Dr. Gibson, that it is a very hard paper to follow.

Dr. Gibson is to be commended upon his work. If there is any work that this section is falling down on it is the work of treating deaf people. If there is an appreciative patient who comes to your office it is the one who hears poorly and whose hearing you improve.

I have cases where I don't know what makes them deaf. I don't know what to do for them. I catheterize the tubes and inflate, but I am not always able to tell whether it is mixed deafness or perceptive deafness. I venture to say I should be entirely unharmed if every man here who is guiltless were to throw a stone at me. (Laughter and applause.)

Dr. J. P. Matheson, Charlotte: I enjoyed Dr. Gibson's paper very much, and particularly take to the point of the type of mixed deafness. I feel that frequently these cases are not properly diagnosed, and, of course, if a diagnosis is not made the proper line of treatment is not likely to be carried out. We have been using the audiometer for several months and find it useful in properly estimating our diagnosis. It is also useful, particularly so in determining whether or not any improvement is taking place. In cases of this type, if the obstructive deafness predominates and I can find some definite obstruction or focus of infection, then I feel that I may help my patient; but if I have to rely on the usual treatment for the chronic middle ear type of deafness, then I feel that it is rather hopeless.

In the inner ear type of deafness, in most cases, I like the assistance of an internist.

I think Dr. Gibson had a very fine and useful paper.

Dr. Gibson, closing the discussion: With reference to the question as to a plus-minus: in my technique I use a fork—for air 110 seconds, and bone 70 seconds. Any time the fork is heard some length of time by air- and bone-conduction it is a plus-minus. You will get a plus-minus, as I said, only when the air is shortened and the bone is lengthened.

I was very glad to have Dr. Matheson give us his experience with the audiometer. I haven't one; I have only seen it demonstrated and am not familiar with it. I am mighty glad to know that he is pleased, and I should be more favorable now toward investing in one.

Dr. Matheson feels that internal ear deafness is an internist's proposition. I can't agree with him. I have had a great many cases that were much improved with the treatment given by us. We work out all of these cases and make our diagnosis before we do anything at all. We find a mixed deafness, and often a mixed deafness with the nerve predominating. The cause for that we find

often to be some focal infection. When the focal infection is removed the patient is often materially improved.

Now I want to report an interesting case. I shall mention just this one. I had a school teacher 63 years old who thought he had been deaf for eight or ten years in one ear, and suddenly the other ear became very bad and he realized that he would be thrown ont of employment if it was not improved.

His general health was not so good. Examinations as to the ear proved a mixed deafness. His Wasserman was negative, and we found no other condition except that he had mixed deafness and the conditions that were found in his head—nose blocked; teeth showed that he needed two extractions; tonsils had pus in them.

Those conditions were relieved and the ear in which he thought he was deaf—and I guess he was right—got so that he could hear a conversational voice; he could hear a watch tick at eight or ten inches. Though 63 years of age he gained 15 pounds, and he changed from a chalky appearance to a rosy, healthy appearance.

I thank you (Applause.)

INDICATIONS FOR TONSILLECTOMY

Joseph B. Greene, M. D., Asheville

The frequency and also the importance of the operation of tonsillectomy occurring in our special branch of medicine is my reason for bringing this subject to your attention today. It is not that I have anything new to offer, but it is my hope to elicit discussion which will be helpful to us all. There is no operation in the whole domain of surgery which, if well performed when the indications are clear, brings greater relief to our patients and more credit to our profession than a tonsillectomy. However, we must constantly bear in mind that the operation, even in the hands of the most skilful, is not without danger. The number of fatalities reported in the literature on the subject, though not startling, fully justifies this statement. There is a class of patients, particularly adult women, who complain of painful dry throats following tonsillectomy.. This may be due to inaccuracy of dissection, but, whatever the cause, it is one of the disappointments which may be occasionally encountered. We should also bear in mind that secondary foci may develop in other organs of the body, as the joints, lymphatic glands, gall-bladder, etc., well removed from the original focus in the tonsils. In such cases the relief of the symptoms may be slow and at times disappointing. After removal of the primary focus every therapeutic and hygienic measure possible should be brought into use to build up the resistance of the patient.

The tonsils in early infancy, before they have become the seat of chronic infection, are thought to perform a useful function in the formation of leukocytes in the same way as lymphoid tissue elsewhere in the body. As the human organism is well provided with lymphoid tissue situated in other regions, it is not likely that any harm ever results, on this account, from removal of the faucial

tonsils. It is held by some, though not proven, that the crypts of the tonsils, acting as test tubes so to speak, and harboring various organisms, tend to immunize the individual against infection of the upper respiratory tract. It can be readily seen that such chronic infections existing in the tonsils may become a distinct danger when the patient's resistance, for any reason, is lowered. This, in my opinion, is what usually happens when one develops an attack of acute tonsillitis.

Attacks of tonsillitis, particularly those occurring in scarlet fever and diphtheria, are likely to leave the tonsils in such a state of chronic inflammation that complete resolution is impossible. We find in our profession two extreme views: One held by those who regard every tonsil as a menace, regardless of its appearance and history; and the other and more conservative view that only the larger, protruding tonsil should be treated surgically. It would seem that somewhere between these extreme views we should stand in giving advice to those seeking our aid in deciding this important question. I might say, in this connection, that as the operation of tonsillectomy is less serious in children than in adults, we can well afford to be less conservative in advising operation.

Serious complications, such as hemorrhage, infection, and lung abscess, are much less frequent in children, and it is a common observation that their convalescence is much more comfortable and satisfactory, particularly so if trauma and hemorrhage be avoided. This being the case, it will be necessary to regard somewhat in a different light the indications for tonsillectomy in children from those in adults.

In children under general anaesthesia, I might say that almost without exception the adenoids are removed with the tonsils, regardless of the symptoms, though the tonsils may be left undisturbed when the adenoids are removed, especially in infants and very young children. This naturally brings me to the question, at what age should the tonsils be removed in children? It has been my custom to postpone operating until the child has reached two or three years of age, depending somewhat upon the size and vigor of the child. In other words, the indications requiring tonsillectomy in the very young should be urgent, such as exists in marked cervical adenitis, acute arthritis, endocarditis, and pyelitis.

The old do not stand operations particularly well, and their expectation of life is not great; hence we must have more urgent indications before subjecting elderly patients to an operation. However, as in young children, the indications may be so urgent as to demand operation at practically any age.

In deciding the question of tonsil removal, it is often of great advantage to work in close association with both the internist and the dentist, in order that our patient may receive the benefit which comes from a thorough investigation and study of the case. This is particularly important in the case of adults.

Although the tonsils are the fruitful source of systemic disease arising from a focal infection, yet we must not lose sight of other regions, as the paranasal sinuses, middle ear, gall-bladder, appendix, intestinal tract, and genito-urinary organs. In children, special emphasis should reasonably be placed on the tonsil as the focus of infection, while in adults, more consideration should be given other regions of the body.

In searching for the cause of a systemic disease occurring in children, the problem is relatively a simple one as compared with that of adults. We are able more readily to exclude the teeth, the gall-bladder, and the genital tract, all important factors in adults, and we are justified in placing special emphasis on the tonsils.

Although the history of the case, in reference to the tonsils, is more important than their appearance in deciding the necessity of tonsil removal, yet there are certain local manifestations of the glands themselves which are helpful in deciding the necessity of a tonsillectomy. Inspection of the fauces will, at times, reveal very large, projecting tonsils which interfere with both phonation and respiration. This type of tonsil, though not necessarily a badly diseased gland, may require removal for mechanical reasons.

It is this kind of tonsil which is most frequently condemned by the general practitioner and school inspector, though from a general health standpoint it is not the most harmful. The tonsil which seems to me the most dangerous to the individual, especially in children, is frequently the large red gland, usually well covered by the pillars, and often presenting large fissures or open crypts, sometimes containing cheesy material. If the anterior pillars present a deep red appearance, we have additional evidence that the tonsils are the site of chronic inflammation.

In adults, where fibrosis has taken place, we are more likely to observe submerged tonsils, not always large, from which at times can be expressed detritus or a milky exudate, the latter being *particularly* strong evidence in favor of their removal. Large, palpable glands in the region of the angle of the jaw, particularly if they are tender, is strong evidence that the faucial tonsils are the site of chronic inflammation. However, Shambaugh is of the opinion that, as the systemic infection often takes place through the blood stream, too much emphasis should not be attached to the absence of glandular enlargement in the region of the tonsils.

We should bear in mind that localized abscesses may be situated deep in the tonsil, to be discovered only at the time of operation. French advocates a method of trans-illumination of the tonsils to determine whether or not there is sufficient disease to justify removal.

Frequent attacks of sore throat, particularly when accompanied by fever, are sufficient evidence to require tonsillectomy. However, we should bear in mind that in very young children pain may not be referred to the throat in attacks of acute tonsillitis. The child may have a stomach and intestinal upset, associated at times with

a considerable rise of temperature, the tonsillar inflammation being entirely overlooked. Such attacks, sometimes termed acidosis, justify operation when the acute attack is well over, due care being taken in the preliminary care of the patient by the giving of alkalis and perhaps glucose before the anesthesia.

The occurrence of paranasal sinus diseases in children, which has been so well emphasized by Dean, is sufficient reason for tonsil and adenoid removal. The association between tonsils in children and acute articular rheumatism, endocarditis, pyelitis, and nephritis, is so close that we are justified in removing the tonsils regardless of their appearance. Chorea, which is closely allied to acute articular rheumatism, would seem to require the same surgical procedure, though some writers, as Crowe, are very conservative in advising surgical measures in such cases. My own experience fully justifies tonsillectomy in chorea.

Cervical adenitis, whether tuberculous or not, demands a tonsillectomy, provided the teeth, the ear, a skin lesion, or a blood disease be excluded. Many tonsils in such cases are found to be the site of latent tuberculosis. Middle ear disease, with or without suppuration, should have the tonsils and adenoids removed before the disease has advanced beyond the hope of repair. When the ear discharge is of long standing, we should be very guarded in our prognosis as to the benefit to be derived from the operation. An attack of quinsy, which is so serious in its manifestations, and which also is so prone to repeat itself, should cause us to advise tonsillectomy without hesitation.

On account of the close association of thyroid enlargement and focal infection, we should be suspicious of the tonsils as a causative factor, though not to the exclusion of other possible foci. We should also bear in mind that such patients do not react well to operations, so we should exert great care in locating the focus of infection. Some general surgeons, when the symptoms point to the tonsils as the causative factor, require their removal before attacking the thyroid, while others prefer that the tonsillectomy follow the operation on the thyroid. It is in such cases that close association with the dentist and internist is most helpful to the patient.

Patients occasionally consult us complaining of lack of strength and vigor, sometimes associated with vague muscular pains. The appetite may be poor and there may be some loss of weight. The tonsils in all such cases should be carefully examined, bearing in mind, of course, that these symptoms may be due to a beginning tuberculosis, or to hyperthyroidism. When these symptoms are due to toxic absorption from the tonsils great benefit can be expected from their removal.

The occurrence of Vincent's angina of the tonsils may require their removal, though, if possible, it is wiser to await a cure of the double infection of the spirochetes and spirilla before advising operation. At times, however, a cure can only be obtained by removal of the tonsils.

There are certain inflammatory conditions of the eye, as corneal ulcer, keratitis, uveitis, etc., which have as a focal origin the tonsils. Unless another source of infection can be discovered, including syphilis, the tonsils should be removed.

There is a certain type of neuritis, involving important nerves, as the optic and auditory, due to a toxemia arising from a certain focus or foci. In all such cases the tonsils should be carefully scrutinized, bearing in mind also the close relationship of the post-ethmoidal cells and the sphenoids to the optic nerve. We should not lose sight of the fact that a syphilitic infection is particularly prone to attack these delicate nerve structures. Great assistance can, in such cases, be derived from a blood and spinal Wassermann.

Diphtheria carriers, whose nose or throat cultures remain positive for a number of weeks, should have their tonsils and adenoids removed. This measure was carried out by the writer as far back as 1908, (Laryngoscope, Nov., 1908) and is now generally practiced at the large contagious hospitals.

The question of the advisability of removing diseased tonsils in cases of pulmonary tuberculosis often arises and becomes at times a very difficult problem. In the presence of temperature, or other marked evidence of activity in the lungs, we should be very slow about subjecting a patient to the added burden of an operation. However, when the case becomes arrested, and the tonsils are evidently harming the patient by being a source of toxic absorption, we should not hesitate to advise operation, local anesthesia being used. In this connection, I should like to strongly urge that care be taken that the tonsils be not disturbed in the presence of active laryngeal or pharyngeal tuberculosis. My motive for sounding this note of warning is for the reason that I have observed several disastrous cases coming under my care, from other states, where active tuberculous ulcers had developed in the tonsillar fossae following operation. In such cases the prognosis is hopeless, and the end comes after a very painful experience.

Before closing this paper, it seems only fair to say a few words about the contraindications to operation, some of which have already been referred to. Among these, I should place first of all hemophilia. The history of the case and the clotting time of the blood should be helpful in excluding such cases. Diabetes, up to a few years ago, was regarded as a contraindication, but now, under the administration of insulin and proper diet, we approach the operation without special anxiety; preference being given, in such cases, to local anesthesia.

In reference to age, I will say again that under two or three years, or after sixty, we should have urgent indications before subjecting our patient to a tonsillectomy. It is generally agreed that, at the two extremes of life, patients do not stand operations well.

Syphilis is not a positive contraindication for tonsillectomy, yet the operation should be postponed until the disease is well under control, with appropriate treatment.

I might say a word about operating upon singers. Although Voorhees, of New York, with a large experience, has seen no harm to the voice following tonsillectomy, yet it has seemed to me that we should proceed with caution in such cases. However, if the indications be urgent the tonsils should be removed with great accuracy of technic, bearing in mind the action of the palatopharyngeus muscle in phonation. Injury to the posterior pillar might prove disastrous to the singing voice.

I realize full well that the subject chosen has been too broad to be fully covered within the limits of my time and your patience, but if a full discussion of the paper is elicited, I shall feel that our time has not been wasted.

DISCUSSION

Dr. H. A. Newell, Henderson: I expect we all do more tonsil operations than any other kind. Therefore, we are rather hesitant to select that as a subject for these meetings, and I am mighty glad that this paper was read. It is a good paper.

There is one thing that has been said, and I think can't be said often enough by us. We want to get to the general practioner, the family physician, the idea that there is no age limit for tonsillectomy. You can't wait till a child is a certain age, but the indications must be the cause for operating.

I am led to say this on account of one particular patient, a child about seven or eight months of age, who became so obstructed that he could not nurse, and I recommended that the tonsils and adenoids be removed. The family physician objected to the operation. On consultation the whole bunch was against me, but after insisting, and after realizing that in all probability the child would die unless something was done, they consented.

After the operation the child nursed within two hours and seemed to have no bad effects at all from it. That was about eighteen months ago. That child is now strong and healthy and doing well.

The main point I want to make is if we can in any way get it before the physicians as a whole not to feel that there is a certain age limit a child must reach, it is an important thing.

Dr. M. R. Gibson, Raleigh: I want to thank Dr. Greene for this valuable paper, for it is one that will be of benefit to all of us.

I want to stress the thought he brought out as to the diagnosis of infected tonsils by the red pillars. It is my opinion that any throat with red pillars is going to have trouble, if trouble has not already developed. I advise that the tonsils ought to come out. Those that do not take my opinion in the matter find later that they, as a rule, do develop some acute tonsilitis.

Referring to what Dr. Newell said, I have a case to report, too It was a child six weeks old, who couldn't nurse, hadn't nursed, and was gradually losing in weight and was going to die. I removed the adenoids only and it nursed immediately afterwards, began to gain weight, and came along nicely.

Dr. L. M. Higgins, Salisbury: Dr. Greene brought out the point that a cryptic tonsil containing detritus in the crypts was sufficient evidence to warrant tonsillectomy. I should like to hear a discussion on this point, because I know that during my training in examining tonsils there was not a tonsil that didn't contain crypts, and there was a very small percentage that didn't contain detritus in the crypts.

You will recall that the normal histology of the tonsil is that every tonsil contains at least from ten to twenty crypts, and that the fact that a tonsil is cryptic and contains detritus is not sufficient evidence to warrant tonsillectomy.

I should like to hear this point discussed.

Dr. Chas. R. Reaves, Greensboro: I think this is a very important paper by Dr. Greene, because to know when to take out a tonsil is a great problem at times. Those who were in the section of medicine know how the general men are rapping on the surgical men for taking out so many tonsils.

If any of you happened to read the paper of Dr. Alvarez, of California, about a year and a half ago, you will note he took the trouble to tabulate 300 cases of adults that came through his office that had had their tonsils removed. He went into the cases very carefully to see what symptoms they had from which they were expecting to get relief.

I was very much surprised when I saw the report. He claimed that nearly 75 per cent of those patients did not get relief from the thing they had their tonsils taken out for. If a patient comes in and is having trouble and says, "I want my tonsils out," we take them out, and if the patient still has the same trouble we have been disappointed.

I think that is the reason why the remarks were made over there yesterday, because we are taking out tonsils and not getting the results the patient was looking for. For that reason I think it is very important that we should be careful and make a better diagnosis on these cases.

I don't think it is always as hard to make the diagnosis in children. Dr. Greene mentioned cervical adenitis. I think that is one of the most important points in the diagnosis. As he said, I think every one who has those conditions should have his tonsils out.

In adults I think it is much harder, and I think we should be much more careful in making our diagnosis and in what we promise our patients.

Dr. A. G. Woodard, Goldsboro: I want to ask Dr. Greene what has been his experience in the removal of tonsils in cases of toxic thyroid. The reason for asking the question is that some four weeks ago I had a patient referred to me to have her tonsils removed. She was a lady about 30 years old who was very nervous, with an enlarged thyroid. I advised her not to have her tonsils removed but to have the thyroid removed or go to see a thyroid specialist.

Her family physician insisted that I remove her tonsils, and we did. The thyroid is normal in size now, and she has been relieved of her nervousness. She had not slept at night in some three months, she said, without taking a hypnotic.

I want to ask Dr. Greene what his experience of removal of tonsils with enlarged thyroid has been.

Dr. W. P. Speas, Hickory: I enjoyed this paper, and I feel that Dr. Greene has covered the ground thoroughly. In this day the laity have, to a great extent, taken this out of our hands, on account of the fact that some agencies have minimized the hazards of this operation, to the point where they come in and, without any advice at all, say, "I want my child's tonsils out."

In cases like that there is a great deal of responsibility on us. As men who have this put up to us squarely, we have to let our conscience be our guide. Where a parent comes in with a child with tonsils apparently normal, and the parent wishes them removed, then it is a question with us as to whether we should remove them or whether we should convince the parent that the child's tonsils do not need removing. But if we attempt to do that, they may go somewhere else and get the child's tonsils out anyway. We do know that the laity have, in some cases, for certain reasons taken the thing rather out of our hands.

There are some throats we can look into and see, as it was mentioned, that the tonsils should be removed, without asking any questions. There are other tonsils which we may look at and be reasonably sure should be left in, without asking any questions; but there are a great number of border-line cases that come to us, where we have to be governed greatly by the symptoms that the child has. If the child has symptoms which are attributable to the tonsils, why, of course, in those cases the tonsils should be removed.

The paper was very interesting and I enjoyed it very much, and I am glad to have heard the discussion on this paper.

Dr. O. C. Daniels, Oriental: Back in 1915, I think at a meeting in Greensboro, I made this statement about indications for removal of tonsils. Dr. Banner read the paper, which was certainly a good paper. It was discussed pro and con. He gave us the indications and the contra-indications. I made this statement, and I have not changed since—that I remove every darned tonsil I get a chance to remove. I still stick to that, unless I think my patient is going to die. Then I would not remove the tonsils.

There are a few things that are settled in my mind. If I examine a patient and I find pus in the tonsils, either through suction or massage, if I find inflammatory conditions around the pillars, I say positively that the patient needs a tonsillectomy.

I happened to be in that latter class. I have suffered from chronic headaches ever since I was a small boy. I went from Wilmington to New York City, looking for relief, and everybody had examined my tonsils; everybody said: "Your tonsils are all right,

don't bother with them." Naturally, being a charity case, I couldn't say: "Take them out anyhow." (Laughter.)

About four years ago I had a pain across my back, something I had never had before. I told my wife there was only one person in the world who would do as I said, and that was my brother. I wrote him to come to Goldsboro to take my tonsils out. He said, "Why do you want them out?" I said, "Well, I think it is certainly unfair to take out as many tonsils as I take out and leave my own in."

He proceeded to take my tonsils out. He had not made more than two or three cuts with the scissors before he got seven or eight drops of pus out of my right tonsil.

I had been a sufferer from chorea all my life. I am at present in the best shape I ever have been. I have been to just as good men in this line as there are in this whole country.

Now I want to answer something that Dr. Woodard mentioned about the thyroid. Any enlargement of a thyroid, to my mind, is a positive indication for tonsillectomy. That would be one of the indications for tonsillectomy.

Yesterday in another section—the Public Health Association—there was a paper read on prevention of diphtheria. I did not discuss the paper, because I was not a member of the Public Health Association of North Carolina. I think that a tonsillectomy and an adenoidectomy will certainly prevent an extremely large number of cases of diphtheria. I am not sure but that the tonsil region, the adenoid region, is the normal habitat of the diphtheria bacillus. Then if you remove this tissue you will, practically speaking, not have any more diphtheria. I have had this experience: I have never seen a case of diphtheria in a patient who had his tonsils and adenoids removed. Maybe some of you have, but I have not. Of course, since I went to Goldsboro I haven't seen as many cases of diphtheria as I did in general practice, but I saw a fair number, certainly a considerable number of nasal and laryngeal cases. In none of those cases, in the whole ten years I was there, did I see a case in a patient that had had his tonsils removed.

I remember another case that came to my office to have a refraction. I make it a rule, when I get a patient in my chair, if I can't find something the matter with him it is not my fault. I examined this patient and I found both tonsils were a little larger than normal. I said, "These tonsils ought to come out." She said, "Well, I thought so, but my family physician didn't." I said, "I think so." She said, "When can I have it done?"

Well, I have one rule in this, as in a person with appendicitis. That is, just as soon as you find out the patient has appendicitis, take out the appendix; just as soon as you find the tonsils need removing, take them out. I told her that. She said, "How about waiting until after Christmas? I have never had an attack of tonsillitis." "You might have," I said, "but that is up to you." She replied, "Well, I will wait till after Christmas."

During Christmas week this woman had as bad an attack of tonsillitis as I have ever seen. She had had no tonsillitis before, but she had had her children's tonsils removed and they were better, and that is the reason she wanted hers removed.

So we cannot always make a correct diagnosis of whether the tonsils should come out or not. By all means take them out.

Dr. H. C. Willis, Wilson: I want to thank Dr. Greene for his paper. I think he has covered the subject nicely. I look upon the indications for taking out the tonsils just as I do the indications for an operation for anything else.

As one of the doctors said, there is a myth going around that a child has to be four years of age before his tonsils should be taken out. His family physician will advise that, his surgeon will advise that. Pathology means disease. If he has a diseased tonsil, regardless of how young or how old he is, there is just as much reason for taking that out as there is for taking out an appendix.

I believe in practically every case it can be determined in the tonsil examination itself by pressure on the anterior pillar and slight pressure at the same time on the tonsil cervical gland right at the angle of the jaw. You can determine, if it is a child, very easily, and in an adult without a great deal of difficulty.

I have taken out tonsils in people all the way from eight months to 72 years. In every case I have observed I have found a benefit.

Some one mentioned a man in California reporting a series of cases in 75 per cent of which there was no improvement following tonsillectomy. That is quite discreditable to the nose and throat man.

There is another phase that has to be taken into consideration in removing tonsils. I have found that if you leave the smallest particle of tonsil in there it is going to become reinfected and give us just as much trouble, and many times more, than if they had never been touched. Don't get the idea that some of us don't leave pieces, because I believe that most men will leave a piece now and then.

That is the case that comes in and says: "Well, I had my tonsils taken out five years ago, and I have the same difficulty with my throat that I had before that." Now I don't call that a tonsillectomy at all. I call that a tonsillotomy. I don't think you can classify the results of a tonsillotomy along with those of a tonsillectomy.

As to the indications for taking out children's tonsils, I think they should be put in two classes—infected and obstructive. If the air passage is obstructed, he is certainly going to have more opportunity for disease of the paranasal sinuses, etc. By clearing that up the individual will improve. There is no question about that. Dr. Dean has established that, at Iowa University.

Sometimes you will see a case that has no pathology in the throat other than a little reddening, suggesting a chronic inflammation of the anterior pillar. I don't think that is an indication for

taking out tonsils. I have seen some cases in which the throat was as pretty as you could draw it, but the tonsils were as rotten as mush, and the pillars were good. It was simply a chronic type of tonsil with an acute exacerbation, and it had a pretty good resistance up to that time.

I recently had a child which had been to several family physicians and also to one general surgeon. It had a pain right over the umbilicus. They could not determine any causative factor. The tonsils were not particularly enlarged, but by making deep pressure on the anterior pillar I could elicit just a little bit of debris from one of the crypts in the superior pole.

I advised a tonsillectomy on that child. From the time that child went to sleep until the present it has not had any pain in the abdomen, whereas it was a daily affair before, whether eating or not eating.

Now tonsils should be classed along in the same category, I think, with teeth and the focal infections. The patient should be examined, not only the throat but the general systems. That is one reason why we don't get the results many times that we expect—because we don't get all of the symptoms and try to take care of the condition other than from the throat standpoint.

I expected in this discussion to hear some one bring out the advantages of x-ray on tonsils, also radium. Right in that connection I want to say just a few words that are a little bit aside from what we are talking about. For thirty minutes, three different sittings, I had my own x-rayed, and if there was any change to be noted, subjectively or objectively, no one could discern it.

I have seen cases in which x-ray has been tried, and if there were any results obtained they were very unfavorable.

My one admonition would be that when a tonsil is infected—and I believe the average nose and throat man can determine that if he examines the patient—it should come out irrespective of age or anything else, because it is pathology.

Dr. Greene, closing the discussion: Mr. Chairman and Gentlemen: I appreciate very much the pleasant words said about the paper and also the generous discussion. I shall take up a few questions that were asked in reference to the paper—first in reference to detritus in the crypts. In my paper I said it is strong evidence in favor of disease of the tonsils, but is not a positive indication for their removal. We have to distinguish between what may be a diseased tonsil, yet not harming the patient, and the other kind causing systemic disease. The patient may be perfectly well and yet he is taking care of a low-grade infection in the crypts of the tonsils.

I can hardly agree with Dr. Willis, although I appreciate all that he said. It would not seem advisable to take out the tonsils of every one that is diseased. I believe there are a great many cases in which it is not necessary to remove them, where the patient is not being harmed by them. If we should remove all diseased tonsils we would take out all tonsils of older children and adults.

In reference to the thyroid enlargement, Dr. Higgins asked about the removal of the tonsils in case of diseases of the thyroid. I think we should be very conservative about those cases, and look for other foci first. There are so many other foci in adults—intestinal tract, bladder, etc. Bloodgood of Johns Hopkins, if I mistake not, advises that the tonsils be removed before the thyroid, provided they are the chief focus of infection. The Mayos, I think, have the thyroid removed first and the tonsils later. So the surgeons are not agreed as to the time of removal of the tonsils which are associated with hyperthyroidism; they do not agree which to do first.

The doctor spoke of removing tonsils in very young children when nursing was impossible. I have a feeling, though I am not sure, that the adenoid was the obstructive agent in that case. If he had removed the adenoids it would not perhaps have been necessary to remove the tonsils. That is my feeling.

Dr. Daniels mentioned a very important point about the incidence of diphtheria in cases of tonsillitis. I think we have to accept his statement at full value, and I agree with him absolutely, that the severity of diphtheria, scarlet fever, and measles, is much less in those having had the tonsils removed, and also that they would be much less apt to have those diseases.

Just a word before I close, about the x-ray and radium. I did not refer to those agents because I have very little faith in them. I stay clear of x-ray and radium.

I must say a word about fulguration. I was out at the State Sanatorium the other day, and I found it was used, with the tuberculous patients, in removing the tonsils. I was surprised at the results. Dr. McCain has done it on about fifty cases. As we all know, the tuberculous patient does not stand operation particularly well, and I really believe that it may prove a valuable aid in the tuberculous and in other patients who are unable to stand the operation of tonsillectomy.

Thank you again. (Applause.)

THE USE OF MORPHIN-SCOPOLAMIN ANESTHESIA IN OPHTHALMIC SURGERY*

J. Y. Malone, M. D., Asheville

I shall not endeavor to discuss the history and literature of "twilight sleep" as used in obstetrics. Since its development in this field it has been used in various branches of surgery with a great many variations.

Morphin-scopolamin anesthesia has had considerable success in obstetrics, rhinological surgery, and preparatory to ether anesthesia. I have been unable to find in the literature any reference to its use in ophthalmic surgery. To my knowledge, it was first used in

*Read by title.

ophthalmic surgery four years ago, by my former associate, Dr. Meyer Wiener, of St. Louis, Mo.

TECHNIC

The technic which I find the most satisfactory consists simply of one hypodermic injection of morphin and scopolamin one and one-half hours before operation. Forty-five minutes after the first injection, a second injection of scopolamin alone is given. Just before operation, the appropriate local anesthesia is used, as if no previous anesthesia had been given.

The dosage used for an average-sized adult is morphin, gr. 1/4, and scopolamin, gr. 1/130, at each injection. The dosage is altered in proportion to age and body weight according to the usual standard.

The usual result is that the patient is quiet, stuporous, incoordinated, cheeks flushed; mouth dry; pupils may be enlarged somewhat. Although the patients are in a stuporous condition they are capable of being aroused momentarily, either by acute pain or loud speech. The patient may be as quiet as with general anesthesia, or as restless as with local anesthesia alone. Even though the patient be in the latter condition, the memory is blocked so that there is, as a rule, no unpleasant recollection of the operation, or fear in case future operations are necessary. Occasionally the patients are noisy and quite excited, but are easily quieted by a few inhalations of ether. Usually, however, the combination of the morphin scopolamin with local anesthesia will replace a general anesthesia, or, if local were the anesthesia of choice, the net gain is the good psychology of no unpleasant recollection of the operation.

Value in Various Types of Operations

(a) *Strabismus:* Various operations for this condition may be done in children, as well as adults, by this technic with the decided advantage that the patient may be told to look at an object and they will do it momentarily. This allows the operator to determine if the condition has been corrected sufficiently. It is impossible to determine this accurately under ether, for general anesthesia usually tends to cause the eyes to turn up and out. Obviously, if the proper correction has not been obtained, it is possible to alter the correction and thus get a better result.

(b) *Dacryocystitis, chronic:* Recontructive operations involving nasal work or extirpation of the lacrymal sac are accomplished readily with this technic without having to resort to general anesthesia.

(c) *Glaucoma, chronic or acute,* may be done with this technic. There is no decided advantage except the psychology in chronic glaucoma. In acute glaucoma, frequently the eye is so painful that the patient is made very restless by its manipulation, in which event a few inhalations of ether are necessary.

(d) *Enucleation* is easily accomplished under this anesthesia.

(e) *Lid Operations:* Operations for entropion, ectropion, trachoma, ptosis and plastic operations, are easily accomplished under this anesthesia, but the only distinct advantage is the absence of recollection of the operation.

(f) *Cataract:* This anesthesia is contra-indicated in cataract operations because perfect control of the patient is necessary.

(g) *Plastic Operations* on the cornea, as well as most operations for *extraction of foreign bodies,* are not suited for this technic. In these operations, as well as cataract operations, the eyeball is either opened widely, or may accidentally be opened widely if the patient should move or strain, thus the danger of expulsive hemorrhage or expulsion of vitreous offers a distinct contra-indication to the use of morphin-scopolamin anesthesia.

CONCLUSIONS

(1). Morphin-scopolamin anesthesia, combined with local anesthesia, is adaptable to many types of operations upon the eye, although there are some operations for which it is contra-indicated

(2). Morphin-scopolamin anesthesia has the advantage, in some cases, of displacing general anesthesia, while in others the advantage is limited to the good psychology of preventing any knowledge or unpleasant recollections of the operation.

(3). Morphin-scopolamin anesthesia enables one to do strabismus operations on children and be able to ascertain the exact amount of correction obtained at the time of operation.

Dr. V. K. Hart, Statesville: Gentlemen, I appreciate very much the privilege of appearing before your section, particularly as I am so young in your state, having been in this splendid country of yours only about a year.

I suppose you have been somewhat amused at the title of this paper. I am in no sense a reformer, and I enjoy tobacco as much as any one else. You will understand why I took the subject after I report my first case. The cases reported represent a great deal of time and effort, and I ask your patient indulgence while I go through this paper.

Some one is going to get up and say, "Doctor, you mention in several of your cases diseased tonsils, coexisting with vestibular involvement. How can you rule out the fact that possibly the tonsils were foci, acting as an etiological factor?" I can't. The only way in which I can retaliate is that two of the cases had practically complete relief after discontinuing tobacco. These were cases with the worst type of vertigo. We did not remove the tonsils.

TOBACCO AND EIGHTH NERVE LESIONS

Report of Nine Cases

V. K. Hart, M. S., M. D., Davis Hospital, Statesville

The following cases are presented because they are believed to be of extreme clinical interest. The writer has seen tobacco men-

tioned as a factor in chronic tubal catarrh and in auditory nerve deafness. The text book discussions are very brief, therefore curiosity was aroused as to the exact part played by nicotine in nerve lesions of the internal ear mechanism. Furthermore, did it affect the eighth nerve as a whole, or was either branch apt to be involved? If either branch, was one more apt to be involved than the other? It was with these questions in mind that the following cases were studied.

It must be remembered that all these cases were private cases. Their comfort and convenience prevented some work from being done. Thus the writer would have liked to have done routinely both the caloric and the turning tests on all cases. However, having been through one, the patient frequently was not desirous of going through the other. It is believed, nevertheless, that enough data have been gathered to bring out several important points.

Some facts may be stated which apply to all the cases mentioned. To state these now will forestall monotonous repetition. In every case the Rinne' was positive, i. e., air conduction was greater than bone conduction. In no case was the retraction of the drums extreme, or was there marked thickening or atrophy, or abnormal relaxation. The eustachian tubes were patulous in all the cases, though in two of them it was necessary to dilate the tubes first. The use of the otoscope in no case showed fixation of the malleus. Nasopharyngeal lesions and obstructions were absent in all cases.

There was no evidence of an intracranial lesion in any patient studied. No evidence of syphilis in any case was demonstrated, either clinical or laboratory. At no time were spontaneous past pointing or falling observed. In no case was there a chronically discharging ear, and in only two a previous acute otitis media, cases six and seven. Tinnitus was present in case six. Emphasis is laid on the fact, then, that an earnest attempt was made to rule out lues and middle ear pathology in every case. It is believed this attempt has been successful.

Case 1. A brief synopsis of the history will be given first. The patient had been having dizzy spells extending over a period of three years. They were particularly noticeable on sudden change of position. There is nothing of note as to his past medical history. He was particularly questioned as to a previous otitis media and absolutely no history of the same was obtained. He has been an excessive user of chewing tobacco for over thirty years.

Physical findings: In giving these, to prevent monotonous reading, unnecessary detail is omitted as to negative findings.

Male; age 59 years; white.

Eyes: A moderate refractive error is present which was corrected in each eye. The muscle balance is practically perfect, and all other findings are negative.

Nose: The findings are essentially negative.

Throat: Only finding of note is a pair of chronically diseased tonsils.

Ears: The canals show no abnormalities. The drums are of good color, with some retraction of each, which is not marked. The landmarks are well defined. The hearing tests follow:

	RIGHT	LEFT
Whispered voice	12 ft.	12 ft.
C. (Tuning fork)	3/8	3/8
C^1	5/12	5/12
C^2	9/24	9/24
C^3	36/36	36/36
C^4	48/48	48/48
Weber not referred		
Bone conduction	Normal	Normal

The caloric reactions are by far the most interesting aspects of this case. Each ear was irrigated for as long as five minutes at a time with water at 68 F. No nystagmus, swaying, past pointing, or nausea were induced. The irrigation was repeated in each ear, with a minimum of three minutes for each irrigation, with the head back and then with the face down. No reactions were obtained in any position. Transitory dizziness and nystagmus could be gotten by suddenly changing the position of the head.

Typical reactions were immediately induced in a nurse with the same technic. She was nauseated, fell, and past pointed to the side of irrigation, and had typical nystagmus to the opposite side. Moreover, the caloric test was repeated on the patient a few days later, with identically the same results as before. Unfortunately the patient could not be persuaded to return for the turning tests.

The patient was referred to the medical department for complete examination and all their findings were returned as negative.

Laboratory findings: Blood Wassermann negative. Complete blood count shows nothing of value. B. U. N. 11. 25 mgm. per 100 c.c. Urine examination negative.

Diagnosis: Bilateral neuritis of the eighth nerve of nicotine origin, vestibular impairment predominating.

This man's vertigo, then, is very probably due to a marked impairment of the vestibular apparatus. The foregoing statement is borne out by the fact that his dizziness comes on always with a sudden change of position. The writer is wholly unable to explain why the cochlear mechanism apparently escaped with little demonstrable involvement. Perhaps it will become involved at a later date if the patient continues to chew tobacco excessively. This is the only case where vestibular conduction was so markedly impaired with cochlear function as near the normal.

Case 2. This case is only briefly mentioned because it will help in an intelligent concept of the subject under discussion.

History: His chief complaint was a convulsive tic of the upper lip. His history brought out the fact that he had chewed tobacco, as he expressed it, "Ever since I could spit." He had never had a discharging ear, and complained of neither poor hearing nor dizzy spells.

To save time and space, the details of his examination are omitted. His head examination was negative except for bad teeth. The medical findings were unimportant, and they include a negative Wassermann. A diagnosis was made of habit spasm.

The point stressed in this case is a very definitely delayed caloric reaction in each ear. Nystagmus occurred in three minutes and a half when the right

ear was irrigated, and in three minutes when the left one was irrigated. The hearing was apparently unimpaired.

The interpretation of this case is that the man had a very early involvement of the vestibular branch of the eighth nerve of tobacco origin, as indicated by the delayed caloric reactions.

Case 3. History: The chief complaint was that of dizzy spells. He never at any time, in so far as he knows, has had a discharging ear. His past medical history shows that he had typhoid in 1903, malaria at the age of twelve, and appendicitis in 1917, for which he was operated. He had chewed tobacco for a great many years and admits chewing as much as half a plug a day.

Physical findings: Male; age 47 years; white.

Eyes: Emmetropic. Presbyopia, which is corrected by proper glasses. Other eye findings are wholly negative.

Nose: Septum somewhat irregular and turbinates congested. No pus demonstrable after shrinking.

Throat: Chronically diseased atrophic tonsils. Other findings are negative.

Ears: Canals negative. Drums of good color, with slight retraction. Hearing as worked out with the tuning forks is entirely normal each ear.

The caloric reactions were present and typical in each ear. Nystagmus towards non-irrigated ear began in one minute right ear, and one minute and fifteen seconds left. Past pointing and falling were to the side of irrigation.

When examined by the medical department he was found to have a sacroiliac subluxation. Otherwise the findings were wholly negative.

Laboratory findings: Blood Wassermann negative. Spinal fluid Wassermann negative, and spinal fluid examination shows nothing of value. Complete blood count negative throughout. Urine examination negative.

It was felt in view of the above findings that the attacks of vertigo of this patient were due to a toxic disturbance of the kinetic-static labyrinth. This was borne out by the fact that, three weeks after he had very materially reduced the amount of tobacco used, the dizzy spells had practically ceased.

Diagnosis: Bilateral neuritis of vestibular branch of the eighth nerve, of Nicotine origin, early stage.

Case 4. History: Chief complaint was that of dizzy spells. Had had them occasionally for the past fifteen years. He stated that he felt that he was going to fall over. They have been occurring more frequently lately. An attack lasts from fifteen minutes to an hour, and he is relieved by lying down. He states that he has chewed tobacco since he was twenty years of age. There is no history of middle ear disease.

Physical findings: Male; age 55 years; white.

Eyes: He has a slight refractive error, which has been corrected for some time.

Nose: Negative.

Throat: Tonsils large and diseased.

Ears: Canals negative. Drums show no gross abnormalities. The ear record follows:

	RIGHT	LEFT
Whispered voice	Hears well	Hears well
Weber slightly to right		
C	5/8	5/8
C^1	8/12	8/12
C^2	18/24	18/24
C^3	36/36	36/36
C^4	48/48	48/48
Bone conduction	Minus 5 sec.	Normal

Turning tests:

Head 30 degrees forward.

10 turns right in 20 seconds. Duration after nystagmus, 26 seconds.
10 turns left in 20 seconds. Duration after nystagmus, 22 seconds.
10 turns right in 10 seconds. Past pointed right.
10 turns left in 10 seconds. Past pointed left.

Head 120 degrees forward.

5 turns right in 10 seconds. Fell right.
5 turns left in 10 seconds. Fell left.

The patient's medical examination was essentially negative.

Laboratory findings: Blood Wassermann negative. Complete blood count negative. Spinal fluid clear, and cell count normal. The State Laboratory recorded the spinal Wassermann reaction unsatisfactory. Just why is not known. It is felt that it would be negative, if repeated, in view of the normal cell count.

This man had no middle ear lesion. There is no evidence of intracranial pathology. There are no uncorrected ocular defects. There is no evidence of cardio-vascular disease. Therefore, it stands to reason that his vertigo is probably a toxemia with a consequent early vestibular irritation. In view of his negative physical examination, it is felt that this toxemia is of nicotine origin.

Diagnosis: Neuritis Vestibular branch of eighth nerve of nicotine origin, early stage.

His ear examination shows three slight deviations from the normal:

1. A diminished bone conduction of five seconds in the right ear.
2. A slight cutting down of the low and middle tones.
3. Slightly diminished time of nystagmus when turned to the left (22 seconds).

Any of these changes could be accounted for by errors in technique, and have therefore been considered negligible.

Case 5. History: Chief complaint is that of dizzy spells which he noticed on going to bed and arising. He states that the room seemed to move about him. He has chewed tobacco for ten years.

His past medical history gives nothing of importance.

Physical findings: Male; age 43 years; white.

Eyes: Patient has a slight spontaneous nystagmus, rotary in character, labyrinthine in type, with a quick and a slow component, on looking to right or left. It is more marked to the left. He has a small amount of hyperopia and a presbyopia. The latter was properly corrected when he came under observation. He has since been given a bifocal lens. The other eye findings are negative.

Nose: Negative.

Throat: Small atrophic tonsils.

Ears: Canals negative. Drums show no gross abnormalities. There is a slight decrease in bone conduction of about four seconds in each ear; otherwise the tests are quite negative throughout. He hears all tuning forks well. Furthermore, he reacts typically to the turning tests. The time of nystagmus was evidently normal as nearly as could be estimated, taking into account, of course, his spontaneous nystagmus.

His medical exemination showed no abnormalities.

Laboratory findings: Wassermann negative. Blood count negative. Urine examination negative.

Here again it is felt that this man's vertigo, in view of other negative findings, is due to a vestibular irritation of nicotine origin. This probably accounts for his nystagmus. The involvment is early because the nerve pathways, as shown by the hearing and vestibular tests, are intact. This fact is further emphasized by the patient's practically complete relief since he has discontinued the use of chewing tobacco.

Diagnosis: Bilateral neuritis Vestibular branch of the eighth nerve, of nicotine origin, early stage.

Case 6. History: The patient's chief complaint, in contradistinction to the preceding case, was that of deafness and tinnitus. He had an attack of acute otitis media two years ago in the right ear. The ear discharged for two weeks, but has never run since that time. He states that he has never had a discharging ear before or since. His past medical history gives nothing of value except that he has been an excessive chewer of tobacco for the past twenty-five years.

Physical findings: Male; age 48 years; white.

Eyes: The patient has emmetropic eyes. He has a presbyopia properly corrected by glasses. Slight spontaneous nystagmus, lateral with a tendency to be rotary, and labyrinthine in type, was present. All other eye findings are negative.

Nose: Other than a moderately deflected septum, the findings are wholly negative.

Throat: The patient has chronically diseased, atrophic tonsils. Other findings are negative.

Ears: Canals negative. Both drums are of fair color and moderately retracted. The right is slightly scarred. The hearing tests follow:

	RIGHT	LEFT
Whispered voice	2 in.	Loud only
C (Tuning fork)	0/8	0/8
C^1	1/12	0/12
C^2	2/24	1/24
C^3	2/36	2/36
C^4	0/48	0/48
Weber unsatisfactory.		
Bone conduction	Minus 12 sec.	Minus 12 sec.

Here again the caloric reactions are of extreme interest. There was slight swaying and increased nystagmus after irrigating each ear for five minutes with the

head erect. There was no well defined past pointing. Vertigo was not well defined.

Turning tests:

Head 30 degrees forward.

10 turns right in 20 seconds. Nystagmus duration 15 seconds before returning to what might be called normal.

10 turns left in 20 seconds. Nystagmus duration 10 seconds before returning to what might be called normal.

10 turns right in 10 seconds. Did not past point.

10 turns left in 10 seconds. Past pointed once.

Head 120 degrees forward.

5 turns right in 10 seconds. Fell right.

5 turns left in 10 seconds. Fell left.

The hearing in the left ear is slightly more impaired than in the right. Furthermore, when turned to the right, and this affects the left ear more than the right, he did not past point.

Laboratory findings: Blood Wassermann negative. Spinal fluid Wassermann negative and cell count 2 per cu.mm., lymphocytes. The fluid was clear and there was no increase in pressure. Urine examination negative. Blood count not reported.

It is interesting to note that he is more deaf in the left ear than in the right, although the right was the one in which he had an attack of otitis media. Furthermore, his deafness is out of all proportion to any demonstrable middle ear pathology.

The short duration of nystagmus and the practically absent past pointing in the turning tests bear out the caloric reactions. Furthermore, the spontaneous nystagmus suggests vestibular irritation. Moreover, his vertigo was not marked after the turning and was of very short duration. Hence the vestibular apparatus seems to be decidedly involved as well as the cochlear.

Having found the labyrinthine involvment on each side, the man was questioned as to dizzy spells. He admitted that he did have occasional attacks of dizziness, particularly with a sudden change of position of the head. Here, too, the muscle sense seems to have very well compensated for bilateral impairment of the kinetic-static labyrinth, as it has in Case 1.

Diagnosis: Bilateral neuritis of the eighth nerve, both vestibular and cochlear, of nicotine origin.

Case 7. History: The patient's chief complaint was that of deafness. He had had an acute otitis media in the left ear some 38 years ago. This lasted only a few days. The ear has never discharged since. He chews tobacco four or five times a day and has done so for a great many years. He smokes a pipe about six times a day. First noticed trouble with his hearing about eight years ago. It has gotten worse lately. He has never had any dizzy spells and his past medical history gives nothing of value.

Physical findings: Male; white; age 64 years.

Eyes: Has a moderate refractive error and a presbyopia. Both of these have been properly corrected since coming under observation. Otherwise the eye findings are wholly negative.

Nose: No findings of importance.

Throat: Very small atrophic tonsils. Otherwise findings are negative.

Ears: The canals and drums show no gross pathology. The hearing tests follow:

	RIGHT	LEFT
Whispered voice	4 ft.	2 ft.
C (Tuning fork)	0/8	0/8
C^1	1/12	1/12
C^2	3/24	3/24
C^3	18/36	12/36
C^4	6/48	4/48
Weber not referred		
Bone conduction	Minus 10 sec.	Minus 12 sec.

Caloric reactions: With the head upright, nystagmus occurred in three minutes when the right ear was irrigated and five minutes when the left ear was irrigated. The vertigo was transitory and therefore the past pointing was not well defined. With the head back, nystagmus occurred in two minutes and forty seconds right, and four minutes left. Here again the vertigo was of short duration. On standing him up after the irrigation, he swayed but did not fall.

Turning tests: These bear out the caloric reactions.

Head 30 degrees forward:

10 turns right in 20 seconds. Nystagmus, duration 5 seconds.
10 turns left in 20 seconds, Nystagmus, duration 10 seconds.
10 turns right in 10 seconds. Past pointed only twice.
10 turns left in 10 seconds. Past pointed once with each arm.
Not marked either side.

Head 120 degrees forward.

5 turns right in 10 seconds. Sways a little. No definite falling.
5 turns left in 10 seconds. Sways a little. No definite falling.
(Note) Vertigo of very short duration after each turning.

A medical examination disclosed nothing of value.

Laboratory findings: These are all negative and they include a negative blood Wassermann and a negative spinal fluid Wassermann.

In this case a definite involvment of both branches is shown. The hearing tests disclose a typical nerve deafness. The vestibular tests also show a marked reduction of function. Both the caloric and turning tests bear out this statement.

Diagnosis: Bilateral neuritis of the eighth nerve, both vestibular and cochlear, of nicotine origin.

Case 8. History: This patient came in complaining of burning and smarting of the eyelids. He had chewed tobacco for 44 years. Some dizzy spells, about twelve in number, were experienced a year ago. They were of very short duration. He had had none since. He has noticed recently, however, that his hearing is impaired. He has never had a discharging ear. The past medical history gives no information of value.

Physical findings: Male; white; age 61 years.

Eyes: He has a hyperopic astigmatism which has since been corrected with the proper glasses, together with his presbyopia. The other eye findings are negative.

Nose: No findings of importance.

Throat: Chronically diseased atrophic tonsils. Other findings negative.
Ears: Canals negative. Drums show no gross pathology.

	RIGHT	LEFT
Whispered voice	6 ft.	6 ft.
C	2/8	2/8
C^1	6/12	6/12
C^2	12/24	12/24
C^3	12/36	12/36
C^4	24/48	3/48
Weber not referred.		
Bone conduction	Minus 6 sec.	Minus 6 sec.

Turning tests:

10 turns right in 20 seconds. Nystagmus, duration 20 seconds.
10 turns left in 20 seconds. Nystagmus, duration 18 seconds.
10 turns right in 10 seconds. Past points right.
10 turns left in 10 seconds. Past points left

Head 120 degrees forward.
5 turns right in 10 seconds—sways right.
5 turns left in 10 seconds—sways left.

Caloric Reactions:

Head 30 degrees forward.
Irrigation right ear,—nystagmus occurred in 50 seconds.
Irrigation left ear,—nystagmus occurred in 45 seconds.
The medical examination disclosed nothing of value.

Laboratory findings: Blood count negative. Blood Wassermann negative. Spinal puncture and spinal Wassermann negative. Urine examination negative.

The vestibular tests in this case give rather paradoxical findings. The time of the after-nystagmus was apparently shortened in the turning tests. However, nystagmus occurred altogether within normal time limits when the caloric test was used. If the duration of the after-nystagmus in the turning tests was cut down, there would be a very noticeable lengthening of the time interval before nystagmus occurs in the caloric test. This is true because in the turning test both canals are being stimulated, while in the caloric only one.

The writer believes there must have been some error in recording the time in the turning tests. Therefore, he feels that the involvment in this case is primarily of the auditory branch with no demonstrable involvment of the vestibular branch. It is felt that this auditory involvment is of nicotine origin, inasmuch as there is no other demonstrable cause.

Diagnosis: Bilateral neuritis cochlear branch eighth nerve, of nicotine origin, late stage.

Case 9. The chief complaint in this case was that of deafness. He states that he first noticed a little impairment at about twenty-five years of age. Neither ear has ever discharged. He smokes about twenty cigarettes a day and inhales all of them. He had pneumonia at the age of fifteen and again at twenty-one years of age.

Physical findings: Male; white; age 55 years.
Eyes: Nothing of value.
Nose: Negative.

Throat: Chronically diseased atrophic tonsils.

Ears: Canals negative. Drums negative.

	RIGHT	LEFT
Whispered voice	Loud only	Loud only
Spoken voice	2 ft.	2 ft.
C	1/8	1/8
C^1	2/12	2/12
C^2	3/24	3/24
C^3	1/36	1/36
C^4	0/48	0/48

Weber not referred.

Bone conduction markedly diminished each ear.

Turning tests: Reacts normally in every way.

The medical examination gave no findings of importance.

Laboratory findings: Blood count negative; blood Wassermann negative. Spinal puncture and spinal Wassermann negative. Urine examination negative.

This is a classical case of auditory nerve deafness, with no demonstrable involvment of the vestibular branch. No other cause being demonstrable, it is believed that the cause is tobacco.

Diagnosis: Bilateral neuritis auditory Branch of eighth nerve of nicotine origin.

SUMMARY

1. The vestibular branch may be markedly involved with apparently little or no cochlear involvement, as shown by Cases 1 and 2.

2. Vestibular irritation may occur with no gross cochlear change. This is apt to be the first sign of nerve involvement. Furthermore, irritation may occur without any impairment of nerve conduction. Cases 3, 4, and 5 illustrate these points.

3. Vestibular and cochlear involvement may occur concurrently, as shown by Cases 6 and 7.

4. Cochlear involvement may be marked with no demonstrable lesion of the vestibular apparatus, as shown by Cases 8 and 9.

5. Eight out of nine cases reported are in tobacco chewers. Therefore it would seem there is much more absorption from this form of habit than in smoking.

Discussion: Cushny states that nicotine first stimulates and later paralyzes the sympathetic nerve ganglia, whether applied locally of injected into the circulation. He also brings out the fact that nicotine may cause medullary stimulation.

The logical point of attack, then, for a toxemia such as caused by excessive chewing or smoking of tobacco would seem to be the hair-cells of the organ of Corti, those of the maculae acusticae of the saccule and utricle, and those of the cristae acusticae in the ampullae of the canals. These cells connect with the ganglion of Corti, and Scarpa's ganglion, which are the peripheral ganglia of the auditory and vestibular branches respectively. Moreover, the processes of these ganglia (dendrites) connect with those of the

hair-cells (axones). Therefore these ganglia could be affected by direct contiguity. They might even be affected independently, but this does seem improbable, inasmuch as the endolymph is the most favorable medium for the absorption of a toxin, and the initial point of attack would naturally be the neuro-epithelium, and then by direct extension the ganglia proper. It is true that medullary involvement may be also a factor, but this is highly improbable because no other cranial nerve involvement was demonstrated in any of the cases presented.

It is true, furthermore, that occasionally one encounters a toxic lesion of the optic nerve caused by tobacco. DeSchweinitz states that he believes he has observed a pure tobacco amblyopia. It seems, too, that in such cases the involvement is in the nerve itself. Hence we have to consider a pure nerve involvement of the eighth nerve. Again, this is highly improbable, because the cochlear and vestibular branches are very intimately related before they enter the brain stem, and it would be difficult to conceive of pathology involving the nerve trunk which did not involve both branches. Yet the cases studied tend to show that one branch may be involved to more or less exclusion of the other.

It is indeed difficult to distinguish between a lesion of the end organs and of the nerve itself. The writer corresponded with Dr. L. W. Dean relative to this point. He suggested the use of the galvanic test to make such a distinction. A letter was addressed to Dr. George W. Mackenzie, Editor of the Journal of Ophthalmology, Otology and Laryngology, asking for some reprints relative to the interpretation of the findings in this test. He replied that such were not immediately available and consequently the test was not used.

The question naturally arises, particularly in reference to Case 1, as to why vestibular involvement should be marked with little cochlear impairment. This is a very logical question, in view of the hypothesis that the toxin attacks the neuro-epithelium and the peripheral ganglia. Why should it attack one group and not the other? The explanation given is that the hearing tests used are somewhat imperfect. Probably the most accurate instrument for the recording of hearing is the audiometer used in the clinic of Dr. L. W. Dean. By means of this instrument very accurate coöperation of the patient is obtained and the hearing may be graphically charted. In this way, certain imperfections of hearing may be demonstrated not observed with the ordinary tests, in which there is such a large personal equation. If such a means of recording the hearing had been available, it is believed that Case 1 would have shown impairment of cochlear function not otherwise demonstrated.

It will be noted, also, that in the cases showing vestibular irritation (and the word irritation is used with the meaning that there is no actual impairment of vestibular conduction) there was, too, no apparent cochlear lesion. However, in these cases there is an easy explanation. Nicotine in the early stages would stimulate the ganglia, with a resultant vertigo. In such a stage of stimulation, there certainly would be no diminution of hearing.

It is much more difficult to explain marked cochlear involvement without apparent disturbance of vestibular function, as shown by Cases 8 and 9. The only explanation that can be offered is that the ganglion of Corti is somewhat more peripherally located than Scarpa's ganglion, because the latter lies at the bottom of the internal auditory canal. This may be a factor. No other explanation can be offered by the writer. It should be noted that only in Case 1 was there marked vestibular involvement with little cochlear dysfunction.

Both ears were always more or less equally involved. This is an impressive argument for a toxemia such as an absorption of nicotine.

These cases show two things of value other than just the fact that tobacco may injure the eighth nerve. First, they show the value of routine ear examinations. The value of the vestibular tests in these examinations is not to be discounted. They helped the writer very materially in the diagnosis of an early cerebellar tumor right, which was tentatively confirmed by Dr. Charles Frazier of Philadelphia. He was also able to show by these tests, in another recent case, that a right facial paralysis following a severe head injury was peripheral. Vestibular conduction right was unimpaired. The seventh and eighth nerves are very intimately related in the internal auditory canal and near the brain stem. An intracranial lesion involving one would surely involve the other. A favorable prognosis was given, which has since been justified by the patient's very rapid improvement.

They show, in the second place, that the differential diagnosis of vertigo is really a problem of the ear man. Jones has made a splendid classification of vertigo, stating that every case may be included in one of five groups: 1. Middle ear lesions. 2. Intracranial lesions. 3. Ocular defects. 4. Cardiovascular disease. 5. Toxemia from any organ or focus.

The vestibular tests aid very materially in the proper grouping of a case. With the proper grouping, of course, comes the appropriate treatment and prognosis. Cases 3 and 5 particularly illustrate this point. A definite opinion was given following examination. The patients were instructed to discontinue to as great an extent as possible the chewing of tobacco. Within a few weeks after such advice, and the practical use of it by the patients, they had relief from their vertigo.

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DISCUSSION

Dr. A. M. Whisnant, Charlotte: I think this section is to be congratulated upon having such a paper presented. I belong in the class of young men of this section, but I have watched this work from year to year for twenty-five years. I have seen great improvement all along, and I feel that we are at the beginning of a beneficial age in this special work. The papers that have been presented this morning have been to my mind very, very able and valuable. If we study them, they will be of great value to us.

Dr. J. P. Matheson, Charlotte: I am very glad indeed that Dr. Hart has brought this subject before us. Personally, I have not had the number of cases that he has found. I was just preparing to ask him the very question he said he expected someone would ask. How in the world is he going to rule out toxemia from some other source than tobacco?

Dr. Duell has just reported a number of cases, slightly similar to the ones which Dr. Hart has reported, due to focal infection.

Another point I want to bring out is this—in some of the cases we have had we have found that, in making the ear test, you will frequently find in the audiometer readings, in the fork 4,096 you will find a sudden drop, and then when you get to fork 8,000 it goes up to nearly normal again, and vice versa. They will go right along to fork 4,000, perfectly normal, but when it gets to vibrations of 8,000 it will drop way below the normal line.

I was rather surprised that Dr. Hart had in his series two cases that showed involvement of the vestibular branch and no involvement of the cochlea branch. I was taught by Dr. Fisher that the cochlea organ was much younger and very much more delicate, and that you might find a cochlea and no involvement of the vestibular branch, but you never would see the vestibular branch involved without the cochlea also being involved. Any toxemia that will influence the vestibular nerve I think will certainly influence the cochlea nerve. As this is so much more readily influenced, I thoroughly agree with Dr. Hart in the estimation of the value of vestibular testing.

Brain tumors are showing up very frequently in careful testing of the ears, and thorough vestibular work will certainly help us in making an early diagnosis.

Dr. M. R. Gibson, Raleigh: I have an impression that these cases reported were all bilateral. I have been taught and have gained from experience that four-fifths of all bilateral conditions are syphilis, and that four-fifths of the unilateral cases are toxic conditions. This being true, I can't get away from the idea that possibly some of these cases might have been syphilitic. When I

see a bilateral condition I feel it is syphilis. When it is unilateral it is not so hard to convince me that it is some toxic condition.

Dr. Robt. P. Noble, Raleigh: I know nothing at all about the scientific part of this. Not having chewed tobacco in my life, I am greatly relieved to know that I shall not be affected by the nicotine part. I do want to say that if an organization is ever started for the suppression of tobacco chewers I am going to nominate Dr. Hart as chairman of it. I think he knows more about tobacco chewing than any man in North Carolina. (Laughter.)

Dr. Hart, closing the discussion: I very deeply appreciate the remarks that such men as Dr. Matheson and Dr. Gibson have made, for they are men of much wider experience than mine. I believe that oftentimes we do not study these cases closely enough. These are the type of cases that we tend to let slide by. However, they particularly merit careful investigation. I knew that I should be the subject of some ridicule on account of my having chosen tobacco as the subject of my paper. I really didn't take it up with any moral idea in mind, but because this problem presented something of interest to me more from a toxic standpoint. I do sincerely believe—having made the study I have—that in tobacco chewers you very often get a very marked toxemia. I do believe that. But, what is more important, careful study helps us in the classification of a case. I do believe that a great many otologists don't realize that the differential diagnosis of vertigo is really a problem for the ear man.

Dr. Gibson's criticism is justified and very pertinent. That is why I went over these cases so carefully. I know just as well as any man in this hall that there are many cases that will give a negative blood Wassermann who will have a central nervous system lues. I know, too, that you may even in a few cases get both a spinal Wassermann negative and a blood Wassermann negative, and still the man may have lues, but those cases are by far the exception and not the rule.

If a man has a normal spinal fluid cell count and a negative spinal fluid Wassermann and a negative blood Wassermann, and no nervous stigmatic or congenital stigmatic at all, I believe we can say he probably has not lues. That is the way I tried to interpret the cases I have studied.

I want to thank you again very much. (Applause.)

PERSONAL EXPERIENCES WITH FOCAL INFECTIONS

V. M. Hicks, M. D., Raleigh

It is not the object of the essayist to present a treatise on the subject of focal infection. I wish rather to give some personal experiences in the clinical management of focal infection which has attacked the ocular structures. In order to do this I decided to pick at random through my records and give to you the report of cases which have presented unusual problems.

Case No. 1. Patient A. T. Age 19. Reported for examination on 3/12/25 with history of pain in left eye, with poor vision for ten days, having been treated by family physician who had prescribed Belladonna and eliminative treatments. The family physician had made a provisional diagnosis of interstitial keratitis. The vision in the left eye was reduced to fingers at 15 ft. and there was a marked infiltration in the substance of the cornea from above very similar to a beginning interstitial keratitis. The general examination was negative except for questionable tonsils. Nose examination negative. Wassermann negative. On 3/14/25 the tonsils were removed under local anesthesia and atropine was continued in the left eye. On 3/18/25 all pain was gone from the eye and infiltration of the cornea could scarcely be seen. 3/22/25 cornea clear and vision normal.

SUMMARY: This was undoubtedly a case of focal infection in the tonsils producing a toxemia which has a selective affinity for the cornea. The toxemia was acute. The resistance of the patient was good, and therefore the patient was entirely well in ten days from the time the focus of infection had been removed.

Case No. 2. Patient H. O.; C. Age 34. First examined 11/28/21. Chief complaint was very poor vision in the left eye. The patient states that one week before, she became blind in the left eye during the day. Noticed in the morning that the sight was hazy and before night no vision remained. The vision in the right eye had remained normal. The family history is negative. Nothing of any moment in the personal history of the patient. She is the mother of four children who are well and normal. She is a well and healthy farmer's wife. The examination of the eyes showed that the right eye seemed normal with a vision of 20/15. The left eye apparently has no light preception. The external examination was negative and the fundus reveals the following picture: Nerve head slightly elevated and grayish in color. The lamina cribrosa filled with an exudate. The margin of the nerve head very faint in outline. The retina edematous. Veins enlarged and tortous. Examination of the nose showed deviated septum and questionable ethmoids. Throat showed infected tonsils. General examination was negative. Wassermann negative. Spinal puncture showed fluid normal, and under no increased pressure. X-ray of teeth showed no infection. X-ray confirmed diagnosis of ethmoid infection. 11/29/25 submucous resection of the nasal septum and exenteration of ethmoids on left side by my associate Dr. Wright. The sphenoid was also opened. This operation was done in the afternoon. The following morning the patient was able to count fingers at 3 ft. with the left eye. December 2nd the patients vision gradually increased in the left eye but is coming very poor in the right eye, having reduced to fingers at 10 ft. The fundus examination showed the first stages of process similar to the one that was first seen in the left eye, that of exudative optic neuritis. The patient was again operated and the right ethmoids were exenterated and the right sphenoid opened. From this day the patient's vision rapidly increased. The diseased tonsils were removed on December 2nd the patient's vision gradually increased in the left eye but is coming hospital on January 7th. The vision 20/200 in the right eye and 20/100 in the left eye. The margin of the disc still hazy but no swelling. The patient was seen finally on June 6th at which time the vision was 20/20-2 in each eye and she was able to read Jeager number one.

SUMMARY: I report this case because of the fact that it offers a typical example of focal infection reaching the ocular structures

either by contiguity or continuity. I feel that we should always keep in mind the anatomical picture of this region and the fairly common existence of varied anatomies in the structure which make for these pathological changes. I also reported the case because it presents problems of differential diagnosis from over effection of the optic nerve. My experience has been with cases of exudated neuritis, that the onset is very acute and the vision is reduced to practically nil in a few hours. Systemic symptoms are usually absent. It could in no way be confused with changes in the nerves due to simple intracranial pressure.

Case No. 3. Patient M. B. Age 32. First seen on January 10, 1925. History of having received a moderate blow on the right eye two weeks before. Examination showed a traumatic retinitis with one rather large retinal hemorrhage below. The macula was clear and the vision normal. The nerve was quite normal except for the hemorrhage which extended up to its margin. This hemorrhage seemed to be absorbing slowly. The patient was kept under observation and repeated examinations made without revealing any further pathology. Two weeks after the first visit the vision became hazy and upon examination it was found there was a definite neuroretinitis, with a slight thrombosis of the veins. General examination at this time showed nothing except very septic tonsils. These were removed. In two weeks the vision came up from 20/100 to 20/20. In the macula a large exudate was almost completely absorbed. All hemorrhage was gone, leaving a few white spots of retinal degeneration.

SUMMARY: This was no doubt a case in which the traumatism was incidental in lighting up the neuroretinitis with thrombosis. It is not common, and is, I believe, the only case of this type I have had in my practice. The interesting question that arises in a case of this sort is whether or not the neuroretinitis would have occurred had not the patient received the injury. This of course would be a most interesting medico-legal problem. Fortunately, however, for me this will not be a legal case.

Case No. 4. Patient T. B. U. Age 32. Examined first on 2/22/25. Several years ago gave history of having had a partial paralysis of the vocal cords which cleared up with local treatments. Two weeks ago had torticollis which yielded to local treatments. Ten days ago began to notice black spots in front of left eye. Grew rapidly worse but had no pain. Examination showed the right eye normal in all respects. The left eye was a subject of an advanced uveitis with many large and medium-sized deposits on Descement's membrane. Vision reduced to fingers at 2 ft. A delicate exudate was spreading over the lens capsula with some pigment and remnants of synechia. The vitreous was crowded with opacities and in the upper and inner portion of the fundus there was a huge yellowish white mass of exudative choriditis which was apparently producing the large defect in the field of vision. The examination showed a left ethmoiditis which was at once operated after a general examination revealed that there was nothing of any moment. There was no syphilis or tuberculosis and the tonsils seemed normal. X-ray of teeth negative. After two weeks of local treatment the patient's condition remained unchanged and a second general examination was made with the result that the tonsils were the only possible site of a focus of infection. These were promptly removed. Within one week the patient's condition was very much

improved. The general treatment, which had consisted of mild laxatives with Iodides, was continued. The patient was placed upon a diaphoresis, electric baths being used. The response has been splendid and at the last examination the vision had come up to 20/100 with continued signs of clearing of the vitreous.

SUMMARY: I report this case in order to bring out the point that one can not be too careful in removing all possible foci of infection. We must remember that more than one may exist. A point of importance is the use of general diaphoresis in the general treatment. I am told by friends in Hot Springs who are accustomed to all sorts of conditions arising from focal infection, that not infrequently the patients are relieved of a presisting rheumatism after the cause of infection had been removed before the patient left home. The explanation for this is that a mild toxemia has presisted and the results would have been equally as good at home had the patient been given proper eliminative treatments there. I must confess, however, that the results reported in this case are not always so happy in all my cases of uveitis. It seems in some cases that, regardless of all known methods of treatment, the uveitis continues until complete destruction of the uveal tract had taken place, only showing that all is not known about the cause and treatment of this condition.

Time will not permit my going into further case reports but I cannot resist mentioning some points which I have learned to be important in the management of cases of focal infection.

1. No other field of ophthalmology requires more cooperative endeavor. The ophthalmologist, rhinologist, raidographer, neurologist, and technician play equal and responsible roles. Because the patient's first symptoms are usually those of an impaired vision he first consults the ophthalmologist. The case should always remain under the management of the ophthalmologist because the ocular signs are generally so clear cut he can best ascertain the results of treatment.

2. No case of suspected focal infection should be treated until a thorough examination by a competent internist has been made.

3. We must constantly keep in mind that multiple foci may and often do exist and the patient must be entirely free of all possible foci.

4. We must also remember that a patient suffering from syphilis or tuberculosis can just as well also suffer from a toxic process arriving from a focus of infection.

5. After the focus has been removed, eliminative treatment should be continued until the patient has been freed of the toxemia and normal metabolism has been re-established.

6. Finally, let us be sure not to give to our patients a good prognosis in these cases. The prognosis should always be guarded. It is the experience of the writer that, in some cases, when the focus has been so evident and the patient of the type that one might justly expect a satisfactory response, yet the result has been disappointing

The problems are intricate and require the most careful consideration. There is still much to be known.

It is the hope that this short paper will open a round-table discussion. I am satisfied that all of us have had interesting experiences with this phase of our work, and I hope you will give me the benefit of your experience at this time.

DISCUSSION

Dr. M. R. Gibson, Raleigh: Dr. Hicks is to be commended upon this paper. He has made good reports of very interesting cases, and they are things that we cannot pass over without giving them a good deal of consideration and thought; there ought to be a great deal of study given to this type of work. It is something we come in contact with daily, and naturally it should be of great interest.

I want to mention two cases that we have had recently. One was a young man 17 years of age, who had a neuroretinitis. We found that he had evidence of a bilateral antrum condition, with a left ethmoid; it was the left eye that was involved. He was operated upon (by the way his vision was 20/100 at that time) the following day, and in less than 48 hours his vision had been improved to 20/60. In ten days it was normal again. That has only been about two weeks ago.

Another case I have in mind was not a fundus case, but paralysis of the external rectus. The case was very thoroughly studied. No condition in our line of work, nose and throat work, was found. The Wassermann was negative. X-ray of his teeth showed an abscessed tooth, which was extracted, and he had immediate recovery. This case was that of an older man and it took a longer time for him to recover. However, within three weeks his paralysis was entirely gone.

Dr. Hicks referred to the oculist as being the first man to whom these patients with dim vision come. I should like to say that often it is not the oculist they get to, but the optometrist. I want to throw out a suggestion right now to the incoming chairman, if after giving consideration to the question it meets with his approval, that he appoint a commission to study some way of letting the general practitioner realize the importance of keeping the diseased eye away from the optometrist. I don't know just how this matter should be handled, but I think something ought to be done. If it is done it is our business to do it.

Dr. V. K. Hart, Statesville: I certainly want to heartily endorse Dr. Gibson's remarks as to the optometrist and the evil that he does. It means a delay before the patient reaches a good eye man.

I too can cite an example, and a very unfortunate one. I had occasion to see a man in this state, a very prominent and highly respected man, who was rushed down to me one night because they thought he had suddenly gone blind in one eye. I made a very detailed examination and found that he had a very advanced optic

atrophy, possibly due to sclerosis. He later went to another doctor, who confirmed the diagnosis.

The important point is this: Here was a man, supposedly an intelligent man in the community. The only reason I saw him was because an optometrist, a man in the jewelry store, couldn't fit him with glasses. He had not been properly examined for the past 15 years. His family physician had not seen fit to ask him to have his eyes examined, and his family physician is an intelligent man. If that man had been seen and properly examined 15 years ago he probably would be living today. As it is, he is dead. He died about six weeks after I saw him.

Certainly there is room for proper education of the public, and the only way we can reach the public through legitimate channels, it seems, is, as Dr. Gibson has suggested, through the general practitioner.

Dr. O. C. Daniels, Oriental: I should like to report just one case that I saw that was very puzzling to me. It was in the son of a doctor. The doctor had never referred any cases to me, and I think he came by my office as a drowning man would catch at a straw. The boy was about 14 years old. He was then so blind he could hardly get out of the door; he had to feel his way.

This case had just come from Doctor Knapp's clinic in New York City. The father told me they had made every kind of test on him—Wassermann, had made a spinal puncture, and had made all tuberculosis tests. Every test came out negative. They made a diagnosis of tuberculosis of the internal structure of the eye.

He brought this case to me, and I looked him over. I will be frank to say I did not know what was the matter. I found, however, that he had been operated on under a local anesthetic. Just as he opened his mouth I found in one tonsil fossa a drop of pus oozing. I called his father in and showed him the drop of pus.

This boy had not had his adenoids removed, either. So after the examination I told the father there would be three things I would do if he were my boy: I would search out that sinus and find out what was at the bottom of it and remove whatever it was; I would take out his adenoids; I would treat him for syphilis (though his father was a doctor and doubtless the father never had syphilis), and I would also treat him for tuberculosis of the eye.

We did that. His father readily consented, and we operated on the boy at once. The next morning I gave him some neosalvarsan and proceeded to give him six doses. That boy just gradually cleared up, and his vision seemed as good as you could get it, considering the old scars that were there.

The question has often come to my mind as to what was that patient's trouble, whether I was dealing with syphilis or dealing with a case of focal infection. I have never been able to determine that point. I did not make any Wassermann or any of the other tests—they had all been made.

Dr. Hicks: I heartily agree with the point that was brought out as regards the optometrist, yet I have often felt that it perhaps would not be wise for the specialist to make any concerted fight in regard to these men. I think perhaps it is more important for us to be more careful in our own work.

One of these cases I have reported was that of a woman who had slight light perception; yet the day before I saw that patient she was seen by an eye, nose, and throat man who had prescribed glasses for this condition. So that it seems to me we can in a more satisfactory way gradually show the general public and the practitioners the importance of these things by our own good work. Personally, I find them very receptive. They don't know these things, and when you do tell them they are very receptive and very grateful for it.

The problem of combating the spectacle-fitter is of course a very intricate one. I have often wondered as to the advisability of this specialty taking up the fight.

Dr. Henry L. Sloan, Chairman: I think some people have been thinking about this very same thing. It occurs to me it would be well if this section could have some representative read a paper in the general session, and I think that can be easily arranged. I hope that some of you will think about this, because I really think it is important that we have a paper on this subject presented before the general session. That is where you will get before a greater number of the general practitioners, the men who have these cases to refer, because the general practitioner himself not only refers patients to the optometrist, but he will often go himself. They think there is nothing to it, you know, and that a spectacle-fitter is a spectacle-fitter.

Dr. M. R. Gibson, Raleigh: I didn't mean to say that we wanted to start a fight, but I do feel we ought to do something to educate the doctors. As Dr. Hicks says, they are not receptive, and we are not doing anything to let them know the difference between an optometrist and an oculist.

Dr. Sloan, Chairman: It occurs to me that is a very easy way to get it over.

Dr. J. G. Johnston, Charlotte: It occurs to me, too, that this body of men here, representative of the various county medical societies throughout the state, could try to see that each county society has a paper along that line at some time during the year.

Dr. Sloan, Chairman: I think that is a very good point. Certainly most of the counties in the state must be represented here, and you can educate your own men locally.

SOME CONSIDERATIONS ON THE DOCTRINE OF FOCAL INFECTION*

HIRAM WOODS, M. D., BALTIMORE, MD.

Mr. President and Members of the Medical Society of the State of North Carolina:

During the years I tried to teach ophthalmology at the University of Maryland, I met men from your state as students, and later retained them as friends. Through them, I formed friendships with other members of your state profession, so I do not feel that I am coming among strangers. I beg to thank you for your kind invitation, and I trust that the subject upon which Dr. Sloan has asked me to speak may be of interest.

Probably I should have chosen another had the choice been left to me. However, I have studied the attractive doctrine of focal infection in practice, seen apparent successes and absolute failures, and, like many others, have tried to learn the basis upon which it rests. It is from this standpoint I shall speak, rather than narrate cases. Soon after the doctrine of focal infection, as it is called, was offered, ophthalmologists took up its study. One of the impelling motives was a desire to reduce the number of cases to which had been applied the term "idiopathic," meaning "unknown." As I recall the classification of certain intra-ocular diseases taught years ago, causative factors were syphilis, tuberculosis, rheumatism and idiopathy. Better methods of diagnosis now enable us to classify many cases (previously termed idiopathic) as luetic or tuberculous. Rheumatism has been dethroned as a primary cause and has taken its place, with eye lesions themselves, as an incidental or secondary result. All this has reduced the number of idiopathic cases and opened the way for rational treatment. We must study focal infection in the same way, i.e., as the producer of an ocular lesion, functional derangement or pain, etc., the provocative influence eminating from a distant, chronic, focal infection. These foci are usually very small (as in dental infection), but capable of causing distressing or serious distant troubles.

The pathologist has shown that cultures of material taken from infected teeth, when injected into animals, can produce multiple lesions, among them ocular inflammation. Whether these latter reactions are ever specific for the eye or merely a part of the general infection, is uncertain. I confess to a feeling that clinical ophthalmologists are afflicted with a tendency to mistake associations for causes. Take for instance the multitude of reports a few years ago, of which I made several, claiming that intestinal stasis leading to intestinal auto-intoxication produced ocular lesions. No one can say they do not, but it has never been proved nor its pathology explained. The same thing is true today of the endocrine glands. As a cause of ocular disease these structures have their supporters, but

*Read by title.

on the other hand, most men are content to acknowledge that they know very little about it. It is to be feared that the same error pervades the present enthusiasm of focal infections. There is a difference in the method of procedure of the pathologist and the clinician. The former starts from a primary infectious focus and reasons toward the metastasis. The clinician finds an eye lesion in a human being and tries to work back to the primary infection from which the metastasis may have developed. In other words, the pathologist begins with a definite infection and the clinician begins with a supposed metastasis. It is this condition that has led me to avoid a strictly eye approach and to present the subject from a broader view point—what we know or can find out about the processes underlying clinical observations.

While I was trying to arrange some of the principles which are generally thought to underlie the focal infection doctrine I received from my friend, Dr. George E. deSchweinitz, a copy of the address he delivered in Paris at the reception given him last year by La Societe Francaise D'Ophthalmologie. His subject was: "Concerning certain ocular manifestations of infectious foci to the exclusion of those which are commonly attributed to this etiologic factor." The "exclusion" consists of omitting uveal lesions and reporting two wonderfully striking cases, one of senile alterations in the macula; the other, axial neuritis (retrobulbar neuritis) apparently traced to focal infections. But it is not the cases which lead me to make extensive quotations from his paper. I quote that part of his address in which he presents the basic principles, as he views them. To date, they are the last word, so to speak. They do not clear up all mooted points; on the contrary, they carefully warn against quick conclusions and unrestrained enthusiasms.

"1.—Metastatic and often recurrent infections may result from chronic local infections and their removal, (i.e., the focal infections) is frequently, but not invariably, followed by disappearance of the metastatic lesions and of the recurrences.

"2.—It is assumed that bacteria cause the primary lesions, although it has not been possible thus far to demonstrate a complete mechanism for each organism.

"3.—Animal experimentation has demonstrated that cultures from an infected area (focal infection) injected intravenously *may* produce a metastatic inflammation, a culture from which in its turn injected into the veins of other animals will create an identical lesion, the evidence in this respect being especially clear in abscessed teeth and iritis (Rosenow, Benedict, E. V. L. Brown, Irons, Park Lewis and others). But naturally the entrance of microorganisms into the blood streams does not imply that metastatic

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FOOTNOTE: E. V. L. Brown has succinctly thus stated the facts in question; Bacteremia has necessarily been only assumed in many cases, and yet bacteria should be demonstrable in the blood-stream if the evidences in the case shall be unquestioned. This unassailable evidence is difficult, perhaps impossible, to obtain, because only a few organisms are present in the blood at a given time; if it were otherwise a condition of sepsis would develop.

lesions *will arise,* because the bacteria may be destroyed in the blood stream, but only that they *may* become active in the production of such lesions *if resistance to infection is depressed.* (The italics are mine, H. W.)

"4.—The selective tissue affinity of certain bacteria, i.e., elective localization, is a theory which rests in the opinion of many expert bacteriologists, upon a satisfactory foundation, and may thus be stated; a focal infection being present, bacteria may find favorable opportunities for growth, multiplication and entrance into the lymphatic stream, not only by means of ulceration, but possibly by being carried in by migratory leukocytes acting as phagocytes. Having gained access to the blood-stream, they may be able to withstand the bactericidal action of the blood-stream by reason of the reduction in the resistance of the blood due to the primary infection. Subsequently they may locate in certain tissues, for instance, ocular tissue, either because they have developed a special affinity for these parts and find conditions favorable for their growth, or because the resistance of these parts is reduced by some other agency and thereby favors the localization of the germ.*

"5.—Bacteria coming from the primary lesion (focal infection) which is suppurative may cause a non-suppurative metastatic inflammation because in their contact with the blood serum their virulence is decreased; they may be found in the environment of the effected lesion (for example, staphyloccus, etc., in the aqueous humor in focal iritis); or in the substance of inflamed tissue (for instance, strepto-cocci in the iris [Rosenow, Brown, Irons, Nadler]); or they may be absent, having been destroyed by the virulence of the inflammation which they have produced. Whether these forms of metastatic inflammation are ever produced by circulating bacterial toxins instead of the bacterial element itself is still in controversy. Although no one has proved that circulating bacterial

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*The agency which reduces resistance in these circumstances may be regarded as an injury which puts out of operation local protective forces, and this injury may be chemical, physical, or depend upon a chronic infection. The subject of a remnant of gonorrhea in the posterior urethra (it may be years after its incidence) acquires an arthritis after prolonged walking, or an iritis after excessive reading. This is an example of a physical injury, which neutralizes the protective forces of the part involved. A person with chronic syphilis, or other chronic infection, may beget, for instance, a uveitis, which, resisting the usual remedies, yields to them after the elimination of a focal infection (an abscessed tooth or septic tonsil, etc.). This is an example of the coöperative effect of a luetic or other chronic malady and secondary (pyogenic) infection; or gout, diabetes or hypothyroidism, and an area of chronic (focal) infection may coëxist. An ocular inflammation ensues because the disordered metabolic products furnish a chemical injury which reduces the resistance in an area against which the bacteria from a focal infection launch a successful attack.

E. C. Rosenow's theory that bacteria have a specific tendency to localize in certain tissues of the body, dependent upon some peculiar inherent property, is not accepted by many bacteriologists, most of whom failed to verify his results. Haden thinks failures in this respect are due to the fact that few of them have given sufficient attention to the fundamental technical details.

toxins do not exist, which may find tissue elements for which they possess a specific combining affinity, it is highly probable, in most circumstances, that in bacterial infections the germs themselves are present rather than their products, as toxins and endotoxins, produced in a distant focus.

"6.—The elimination of one focus of infection does not imply that the source of the metastatic inflammation has been removed; the foci may be multiple. A recurrence of the inflammation may be due to a bacterial invasion from an area of infection not previously discovered.*

"7.—After removal of a local infection, the improvement in the metastatic infection, presumably due to it, may be *slowly* progressive, or it may take place *rapidly*, and in a few hours the whole process may disappear, moreover, permanently. Such rapid results are probably similar to those which occasionally follow intravenous injections of foreign proteins, and, like them, are probably nonspecific (Irons).

"8.—Many varieties of pathogenic bacteria have been accused with respect to the ocular effects of focal infection—the staphylococcus, the streptococcus, the pneumococcus, the colon bacillus, and the streptococcus viridans, etc., and it is possible that future investigations will establish a definite relationship of certain bacteria, or bacterial strains, to definite lesions, for instance—the streptococcus viridans of dental sepsis to one variety of focal iritis.

"9.—Local or focal infections may be found in various structures of the body. Common situations, being well known, are the teeth, the tonsils, the paranasal sinuses, the intestines, the posterior urethra and prostate, the seminal vesicles, and the pelvic organs in women; less common ones are the gall-bladder, the appendix, and the skin (boils, etc.); but it is impossible to define the favorite port from which the invading bacteria enter the blood stream.†

"10.—It is possible, even probable, that in certain circumstances a chronic local infection may be responsible, not directly for a metastatic inflammation, but for a disorder (sclerosis, endovasculitis) of the small-vessel supply of a defined area of tissue, which in turn

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*Bearing in mind the well-known fact that the local introduction of foreign protein into living tissue gives rise to local sensitiveness to such foreign protein, Brown, Pusy suggests the following explanation of the relapse: In the first attack there is an actual embolic deposit of bacteria. The reaction to these runs its course, leaving the locality sensitive to the protein of the embolic bacteria. Subsequent infection (and the locality would be of no importance) with such bacteria would introduce their specific protein into the organism, where, being absorbed, this would cause recurrences in the sensitized area.

†In the tabulation of E. V. L. Brown, and E. E. Irons the tonsil is accorded the first place in two hundred most carefully investigated cases of iritis. But this simply proves, as the authors themselves observe, that in this particular series tonsillar infection predominated. Dental infections might readily exceed those from the tonsil in another series. Also these statistics refer only to iritis as an interpretation of focal infection; equally accurate and satisfactory statistics as to other ocular manifestations (of which there are many) of chronic local infection are not available.

determines degeneration of the part thus deprived of its nutritive supply. It is difficult to escape the conviction that in these circumstances the circulation of toxins may be active.

"11.—Removal of one area of focal infection, followed by improvement in, or cure of, a distant tissue-lesion, does not prove that chronic local infection was the source of the bacteria or toxin which caused metastasis; it may have been due to an undiscovered focus, or to another factor. It is clearly necessary to exercise balanced judgment and avoid indiscriminate accusation of focal infections, particularly as this relates to oral sepsis."

The underlying principles given in Dr. deSchweinitz's paper have been presented in full for two reasons; first, they seem to me to be the clearest and most easily understood statement with which I have met; and secondly, because they should be easily accessible, in English, to both clinician and pathologist.

There are several standpoints from which the clinical ophthalmologist may review these principles. The pathology of focal infection is anything but certain. Mild general sepsis; bacteraemia with local manifestations; selective tissue affinity for certain bacteria toxins; presence of bacilli in metastases; recurrence in areas sensitized by previous infections; multiple foci; reactivity in old and quiet infections, provoked by a new pyogenic infection; "coöperative effects of an old chronic and new pyogenic infections," etc., and, throughout, constant reversion to reduced power of local protective forces—all these are suggested. None are uniformly accepted. When experimental studies have been given out with definite claims as to proof, other investigations have failed to confirm. They, in turn, have been told that their failure was due to faulty technic. Literature is full of such things. The clinicians in either general or special practice is forced back to the teachings of clinical experience. There is no such casual certainty as exists in the etiology of lues, malaria, diphtheria, and other diseases. What clinical evidence is there of causative influence of focal infections producing metastatic eye troubles? Chiefly the existence of an ocular lesion, without evidence of the presence of one or more recognized causes, discovery of a focal infection, and cure after its removal. Hundreds of such cases are on record, involving inflammatory and functional eye troubles. Or, in the *presence* of a known cause, usual remedies fail till a focal infection is removed. Again, the most painstaking search often reveals no focal infection or one is removed without benefit to the supposed metastasis. These experiences have doubtless happened to all of us. When they are studied together, we are forced to conclude that, while the basal etiology of functional or inflammatory eye troubles cannot always be determined, a focal infection can reduce normal tissue resistance. Applying these conclusions to our apparent cures, are we not left in doubt as to completeness? Have we really removed a cause or merely gotten rid of something which was interfering with normal recuperative processes? Is the removal of a focal infection, after all, more than a therapeutic experiment? Here is where I feel we

must leave the question. But even so, enough is known to force on us certain duties. Anything which can retard healing processes should be removed.

In conclusion, little more than mere mention of a few items, some of them already given:

1.—An infectious focus may exist and yet show no local symptoms whatever. Many people have dead teeth, and the roentgen rays, when finally used, show apical abscesses; but they are discovered only when, for some reason, a careful search is made for a possible hidden infection. The same is true of tonsillar and paranasal sinus condition. I had a patient with cataract and, in the interest of clean surgery, put him through a thorough examination. A symptomless and unsuspected abscess of the right antrum was found. Of course, it would have been only courting trouble to have removed the cataract before draining this abscess. Oral pyorrhea stands in the same class, and I want to emphasize this clinical fact. Whatever be the explanation of metastasis from focal infection, *its possibility increases responsibility.* Freshly opened tissue, after operation, can take up infection which it would escape if undisturbed. Consequently, if it has to be disturbed, a possible source of focal infection must be eliminated.

2.—Discovery of a possible focal infection, in the presence of an ocular disease which may be a metastasis, does not prove etiologic relation. The only way to test this clinically is to remove the focus and await results. Sometimes these are very prompt. I have seen iritis clear up in 48 hours after the extraction of an infected tooth, and other cases not helped at all.

3.—Even when a focus has been found, there is no certainty that there may not be others, and, possibly, the causative one, undiscovered. It is quite possible that all the removal of the infectious focus does is to relieve one handicap under which Nature is laboring, and thus aid tissue resistence. This is especially true in cases of admitted double infection. For instance, a luetic choroiditis may resist systemic treatment until a focal infection has been removed, be it dental, tonsillar or what not; then the remedies employed to combat a known disease are effective.

4.—Delay in the disappearance of a supposed metastasis after removal of an infectious focus does not prove that the latter had nothing to do with producing it. An example of this was in the case of a man who had, for years, recurrent episcleritis with secondary circumcorneal infection and corneal clouding. Every possible effort was made to find the cause. He also suffered from recurrent attacks of lumbago and sciatica. Finally, attention was drawn to some dental bridge work of which he was very proud. Roentgen ray examination indicated apical abscesses in the supporting teeth. With full knowledge of the uncertainty, he finally consented to sacrifice this bridge work. Apparently there was no result, for his episcleral attacks and lumbago persisted for a year or more. Then little by little their severity subsided and now, for a long period of time, he has been free from both episcleritis and lumbago. The

question also arises as to whether diet, rest, etc., had not been getting in *their* good work, too.

5.—Sometimes we get a very disagreeable proof that the real focus has been found. The ocular lesion becomes suddenly worse after the removal of a supposed metastatic focus. Usually this is only temporary.

6.—While I have discussed the subject only from the positive, there are some things to be considered on the negative side. It is a great mistake to jump at a conclusion. I have known good teeth to be extracted without the slightest benefit to an alleged metastasis; tonsils removed which were only slightly abnormal, if that, just because they were tonsils. Such things, I fear, are all too common. My own opinion of the clinician's duty, when he discovers a focal infection associated with a supposed metastatic disease, is that the infectious focus should be removed for its own sake; but he must not look for cure of the supposed metastasis with enthusiastic confidence, for only time can determine this.

The following committee was appointed by the chairman to arrange for a symposium for the program of the next meeting of the section:

Dr. Joseph B. Greene, Asheville,
Dr. C. W. Banner, Greensboro,
Dr. R. S. Beam, Lumberton.

Dr. O. C. Daniels, Oriental, was nominated for recommendation to the President as chairman for the ensuing year.

Dr. V. M. Hicks, Raleigh, was elected as secretary of the section.

After discussion in regard to the tonsil-adenoid clinics as conducted by the State Board of Health, Dr. Jos. B. Greene moved that a committee of three be appointed from the section to keep in touch and confer with the State Board of Health in regard to the tonsil-adenoid clinics. The motion was amended to provide that the committee acquaint themselves with the feeling of the eye, ear, nose, and throat specialists over the state before conferring with the State Board of Health, and was then carried as amended.

The following committee was appointed by Dr. Daniels, Chairman:

Dr. V. M. Hicks, Raleigh, Chairman,
Dr. J. P. Matheson, Charlotte,
Dr. R. L. Daniels, New Bern.

SECTION OF GYNECOLOGY AND OBSTETRICS

CHAIRMAN: BRODIE C. NALLE, M. A., M. D., F. A. C. S.,
CHARLOTTE

ECLAMPSIA

CHAIRMAN'S ADDRESS
BRODIE C. NALLE, M. A., M. D., F. A. C. S.,
CHARLOTTE

My subject is older than the father of medicine, and since his time the discussion of the etiology and mode of treatment of eclampsia has continued without a definite conclusion as to the cause, and with still greater diversity of opinion as to the best method of treatment. However, there is no longer any reason for discussion of the importance and efficiency of the preventive treatment, neither is there longer any doubt as to the duty and responsibility of the physician in charge nor of the value and importance of the education and coöperation of our patients in this matter of preventive treatment.

The object of this paper is to arouse more enthusiasm in the preventive treatment of eclampsia and to add converts to the conservative method of treatment of those unfortunate or neglected cases who go to the eclampsia stage.

The best treatment of eclampsia is the preventive treatment and this is procured by a vigilant intelligent prenatal care.

Eclampsia has been defined as the culmination of a toxemia of pregnancy which has advanced through two stages, mild and severe. In other words, eclampsia should not be considered as a "bolt from a clear sky," as it is frequently claimed, but as a disturbance which has its premonitory signs and symptoms, which if intelligently interpreted should warn of the approach and render possible the prevention of this horrible and dangerous disease. These pre-eclampsia symptoms may come on slowly or rapidly and may be of varying degrees of severity, and statistics of the results of any method of treatment should consider these facts.

The time has arrived when the obstetrician who has cases of eclampsia, will be severely criticised for his ignorance or indifference, unless the opportunity of observing and the coöperation of the patient has not been afforded him.

Although the etiology is not definitely known, it is interesting to know that Dr. J. S. Lawrence of Philadelphia, through the careful study of 1,708 obstetrical cases, has found that there is a relation of various extraneous diseases and subsequent organic defects to the occurrence of eclampsia. He finds that the diseases contracted previous to pregnancy which appear to render a woman liable to eclampsia are the general infections, such as influenza, pneumonia, acute inflammatory rheumatism, scarlet fever, and so forth, and that women with organic defects originating previous to pregnancy,

such as cardiac, renal and intestinal defects, are especially liable to eclampsia. If these facts be true, the importance of a more carefully taken history and physical examination, as early as practicable, should be all the more emphasized and valuable in putting us on our guard for the detection of toxic symptoms in cases giving such histories and showing such physical defects.

Eclampsia is said not to occur in lower animals and to have been exceedingly rare in the primitive races, so it is suggested that civilization is playing some part in the etiology. Eclampsia is more frequent among inhabitants of cities than among those living a quieter, more natural life in the country. It is more frequent among those who eat proteids and fats excessively. This fact was demontsrated during the World War, when it was noted that eclampsia was less frequent among German mothers who were denied their usual portion of meat. It is more frequent among primiparae than multiparae, a possible explanation of which is that primiparae are naturally more fearful of the dangers and difficulty of labor, with a consequent greater excitement and stimulation of their sympathetic nervous system, which, through its effect upon the glands of internal secretion, interferes with carbohydrate metabolism; and since proteid and fat metabolism are directly dependent on carbohydrate metabolism, the result would be a faulty fat and proteid metabolism, which Sellheim thinks is the most important factor in the production of eclampsia. Is it not possible that the sympathetic nervous system, which is becoming more unstable, more easily excited, with the advance of civilization, is one of the explanations of eclampsia occurring more frequently in the more civilized races?

What, then, is the way to improve the present status of eclampsia?

First, we have to realize that eclampsia is in the very great majority of cases preventable, and to prevent it, it is necessary for us to be familiar with pre-eclamptic symptoms, such as albuminurea, increase in systolic blood pressure, slight edema, and so forth, in the mild cases; increased albuminurea, further increase in systolic blood pressure, marked edema, headaches, gastric pains, retinitis, and so forth, in the severe cases,

Second, a concerted effort to educate the public and expectant mothers to the importance of early and continuous care of a physician and of the necessity of full co-operation with the physician.

Third, careful physicial examination and history of the patient and frequent observation of the patient.

Fourth, the heroic treatment of pre-eclampsia symptoms by diet, elimination, rest in bed if necessary, and particularly by the early induction of labor, if not amenable to treatment, before reaching the dangerous convulsive stage.

It has been shown from many large clinics that the duration of the toxemia plays the important part in the number of permanently affected kidneys, rather than the severe cases of shorter duration, and that the percentage of permanently damaged kidneys in protracted cases of toxemia of pregnancy amounts to from 60 to 70 per cent.

When we consider the increased maternal mortality and the large number of cases left with permanent kidney affections caused by delay, does it not justify us in inducing labor early with assurance of saving practically all the mothers, who may later bear other children, rather than waiting for the development of alarming symptoms, with the consequent maternal mortality and permanent kidney conditions?

Should preventive treatment have been neglected or failed, and we find ourselves confronted with eclampsia, the question of which mode of treatment to be followed has to be decided, whether by immediate and forcible delivery without regard to the condition of the patient or of the cervix, or whether by the conservative method, which means treating the patient medically with the aim of controlling the convulsions, increasing elimination, and waiting for the natural dilatation of the cervix and delivery; or, if nature does not accomplish this, to induce dilatation and delivery by milder means when the condition of the patient justifies our interference.

The advocates of immediate delivery base their position on the fact that pregnancy induced the disease and that the quickest way to cure this is to remove the cause by emptying the uterus. This may be theoretically good, but it is not in practice because: (1) Emptying the uterus does not stop the convulsions in at least 25 per cent of the cases, and frequently convulsions do not appear until after delivery; (2) The eclamptic is a bad surgical risk in the most skilled hands and under the best hospital conditions, and a perilous risk in unskilled hands and under less favorable conditions. These cases are more liable to pneumonia following general anesthesia; acidosis is increased, and degeneration of the liver is increased by general anesthesia.

The argument for the conservative method rests on its results. It is gratifying to note in recent literature that the tide has rapidly turned to the conservative method, and that statistics from various obstetrical clinics show that their results have been greatly improved by the adoption of the conservative method.

Zweifel was an enthusiastic follower of the radical method and practiced it from 1900 to 1911. From 1911 to 1921 he practiced the conservative method, with a lowering of maternal mortality from 18.5 per cent. to 8.5 per cent.

Reports from Johns Hopkins show that from 1894 to 1912 the radical method was used, and from 1912 to 1924 the conservative method was used, and that their mortality by the conservative method was only half that by the radical method, with only a negligible increase in the infant mortality.

From the Charity Hospital in New Orleans comes the report that they have discarded the radical for the conservative method, with gratifying decrease in their mortality. Various similiar reports could be added.

It is true that there is no unity of plan of treatment even among the conservatives, but they all agree upon the main question. They

oppose any forcible interference, and differ only in their methods of controlling convulsions, and in the means of producing elimination.

The various methods are known as:

1. The veratrum method, which has been discarded by the majority of obstetricians.

2. The method of Stroganoff, who deserves the credit for the first definite plan of conservative treatment, and who uses morphin, chloral hydrate, chloroform, and venesection.

3. Ross McPherson relies entirely upon morphin for the control of convulsions.

4. The rotunda method, which depends upon vigorous lavage of stomach and colon.

The scope of this paper does not permit discussion of the relative merits of the various methods of conservative treatment. The adoption of the most practical points in the various treatments would appear to be the best means of procedure.

The following routine seems a practical one, and has proven a satisfactory one in my hands:

1. A quiet room, with a constant attendant.
2. A mouth gag during convulsions, and position of the patient to prevent aspiration into the lungs.
3. Morphin for the control of convulsions.
4. Gastric and colonic lavage under nitrous oxid anesthesia.
5. Purgation.
6. The use of chloroform, questionable.
7. Glucose and insulin following venesection.
8. The possible use of magnesium sulphate for the control of convulsions.

Of interest are articles, in the February number of The American Journal of Obstetrics and Gynecology, on the control of eclampsia convulsions by intraspinal use of magnesium sulphate by Drs. Alton and Lincoln, Worcester, Mass., and on the intravenous use of magnesium sulphate by Dr. Lazard of Los Angeles, each of which method has given most encouraging and wonderful results.

The use of glucose and insulin in toxemia of pregnancy, according to Dr. Paul Titus, is of great benefit in its protective action on the liver.

To me the important question to be decided is between the radical and conservative methods, and of secondary importance is the decision of which of the conservative methods is to be followed. Either conservative method has shown better results than the radical.

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DISCUSSION

Dr. I. M. Proctor, Raleigh: Eclampsia, or the toxemia of pregnancy, to my mind is the most important thing to be considered throughout the nine months. If we did not have to deal with the toxemia of pregnancy it would not be necessary for us to pay a great deal of serious attention to many patients. This is a dangerous disease, and is the most important disease we have to deal with. Our Chairman, I think, has covered the situation as well as anybody could do it. His treatment, to my mind, is in accord with the best thought on the subject.

I should like to stress particularly the side of prevention. I believe in prevention lies our whole treatment of eclampsia. We are divided as to the radical or conservative method of treatment of a developed case of eclampsia, but in prevention we have the most important part of the treatment. When the profession takes up this side of it and educates the public to the fact that eclampsia can be prevented if they will co-operate, then we shall have done the greatest thing for the diseased woman in pregnancy. There are certain symptoms which Dr. Nalle has enumerated which every physician probably should or does know, and I think we should not lay great stress upon the definite symptoms of pending eclampsia, but upon the slighter symptoms of pre-eclampsia. That is when we must treat the approaching disease if we want to save our patients. We must get them when they have the first headache or the slightest nausea. The most important symptom of all is rising systolic pressure. We should take the blood pressure at least every two weeks from the beginning of pregnancy. In my opinion, any patient who shows any pre-eclamptic systoms should be under careful treatment—absolute rest in bed, elimination, starvation or a diet restricted to milk. If the blood pressure continues to rise—which again I say is the most important symptom or sign of eclampsia—if it continues to rise in spite of rest and elimination, induction of labor is the only thing to do.

Dr. J. W. Long, Greensboro: I rose simply to call attention to the value of the abstraction of blood and transfusion in the treatment of the convulsion itself. I cannot better illustrate it than by giving you a recent case—in fact, the patient is still in the hospital. A young matron, Minnie G., only seventeen years old, was brought in having convulsions, and had been having them every twenty or thirty minutes for several hours. She was in the beginning of the ninth month. The urine showed albumin four plus and many granular casts. I did a cesarean section at once. As you know, delivery by any method usually relieves the convulsions. The patient was in a profound stupor, and continued so until the next day, when she had another terriffic convulsion. The albumin was still four plus, and the field full of casts. Her blood typed with her husband's, and we transfused her with 500 c.c. of his blood, after first withdrawing 250 c.c. of her blood. She was still in a stupor, but it was not so profound. The next day there was albumin still, but somewhat reduced. She

had another convulsion, but a light one. I again abstracted 250 c.c. of her blood and transfused her with 500 c.c. of her brother's blood, he too being in the same group. After that she had no more convulsions, the urine showed no more casts and albumin, and in twenty-four hours she was on safe ground.

In this connection I want to say that I deem it good practice in hospital work, and in obstetrical work outside of a hospital, to keep lined up a large number of people, properly grouped, so that we can call for the right kind of blood in an emergency. It is routine practice in the Wesley Long Hospital for every operative case, including obstetrical cases, to be grouped. We group them just as we make routine urinalysis and white blood count. Then we have a long waiting list of young men who have been given the Wassermann test and are grouped and are ready. Another thing—I pay these young men for their blood.

I congratulate the section upon having heard this masterful address by your chairman.

Dr. Nalle, closing the discussion: The scope of my paper did not permit of the discussion of any particular method of treatment, the idea being to bring out the importance and significance of the preventive treatment of eclampsia, and to make a plea for the conservative treatment of those cases which come to eclampsia. Dr. Long suggested blood transfusion. I remember a few years back, I think five or six years ago, Dr. Garrett, a classmate of mine in Washington, D. C., tried blood transfusion in eclampsia, with success in quite a few cases, but since that time he has not been so successful, and the tide now seems to have turned to glucose, which is very much simpler and easier and can be done on short notice.

BETTER OBSTETRICS; HOW TO OBTAIN IT

George H. Ross, M. D., East Durham

Midwifery is as old as the eternal hills. Its inception so far antedates the birth of our own civilization that its origin is shrouded in oblivion. We cannot, with any degree of certainty, trace its history if we would. We can only state that its origin was conceived first in human sympathy, and as the physical stamina of womanhood decreased with the centuries midwifery became a necessity.

When migration followed the conquest of arms or discovery, the midwives accompanied that migration. When Captain John Smith landed at Jamestown and the Pilgrim Fathers landed at Plymouth Rock, the midwives landed with them. Their presence had become a necessity of civilization.

So universal was the custom of employing midwives, and so strong the prejudice against men's engaging in obstetrical practice, that in 1522 a Dr. Wertt of Hamburg, who, dressed as a woman and thus disguised, being detected attending a case of labor, was burned at the stake for his offense; more than a hundred years after this incident Dr. Percival Willoughby, an eminent English physician, in

order to assist his midwife daughter in a case of difficult labor was forced to crawl on his hands and knees into the darkened room of the partulent, without her knowledge of his presence.

Chereau said that obstetrics was first empirical, then superstitious, and next scholastic, and in order to complete Chereau's statement in the sense of bringing it up to date, we add lastly *aseptic*.

Obstetrics did not reach its scholastic stage until the seventeenth century, at which time it began slowly to emerge from the hands of ignorant matrons into the care of physicians. Aseptic obstetrics had its origin within this, the twentieth century, and, I venture the assertion without fear of contradiction, has done more toward alleviating the suffering of mothers in labor and the lives of their progeny than was accomplished in both the empirical and superstitious periods combined. Aseptic obstetrics is yet in its swaddling clothes, and therefore is practically a stranger to all the midwives and many of the physicians. The problem before us as physicians is to cut down the maternal death rate in obstetrics. I verily believe that if we could by some means influence all the midwives and physicians to practice aseptic obstetrics we could cut down the present maternal death rate by at least 50 per cent. There are just two reasons why the maternal death rate is so high. First, the great advance in the knowledge of the science and art of obstetrics fails to reach the midwives and sometimes members of our own profession. Secondly, there is a natural tendency to follow the line of least resistance and keep to the old beaten path. These two evils can be overcome only by the education of all the midwives and physicians as to the exigencies of aseptic obstetrics, and then our living up to the light that has been given us.

Now let us look at some of the figures connected with the maternal death rate of which we have been speaking. The death rate for the United States in 1915 was 6.1 per thousand live births, which was the lowest in the last ten years. In a glance at the rates of the other so-called civilized nations, I find them all lower than our own, with the exception of only two, Spain and Belgium. Japan has consistently kept hers under 4 per 1,000, Holland has reduced hers and kept it under 3, with the exception of one year. Our own country, which is looked upon as a scientific nation, is fourteenth as compared with the other countries of the civilized world.

Suppose we observe the figures of some of the states in our own country and see how we stand locally, as compared to our sister states, in maternal deaths. There are thirty states in the registration area. Of these thirty, 14 had a higher death rate in 1923 than in the previous year. Our sister on the south had the highest death rate—9.7 per thousand live births; Utah the lowest, 5. Virginia, on our north, ranks second above us with 7.4. Only four of the thirty states have a higher maternal death rate than North Carolina—in other words, 25 of the 30 states have a lower death rate than North Carolina—8. Our rate was the same in 1922 and 1923, which shows we are at a standstill so far as aseptic obstetrics is concerned.

Such figures would naturally prompt us to ask: *What is the matter with obstetrics?* Such figures should prompt us to seek the causes of this high death rate in our state—8 per 1,000. South Carolina, Mississippi, Maine, and Delaware are even worse. Do you feel that the indictment which these figures bring should be shouldered upon the midwives of our state? Let us see if it can. Dr. Edward P. Davis of Philadelphia says: "The midwives under strict control do comparatively little harm, but the doctor who does the obstetric work to get the work of the family, giving it as little time and attention as possible, because it pays but little, is the one responsible for many obstetric disasters. The general practitioner, so called, is the greatest danger in obstetrics." Dr. Julius Levy of the Bureau of Child Hygiene, Newark, N. J., speaking through the February, 1923, issue of the American Journal of Health, in a treatise on the comparative responsibility of physicians and midwives as to maternal mortality, gives a new angle to this tradition, in which he presents charts and tables setting forth at length his observations. He shows that in the 15 largest cities of our country, with the single exception of Pittsburg, there has been a gradual decrease in the number of cases reported by midwives, and of midwives reporting cases; yet there has been no decrease, but rather an upward tendency, in maternal morality; and he further adds that the centres having the largest percentage of midwives have the smallest percentage of maternal deaths.

Now let us again turn to the figures of our own state and see how the physicians and midwives compare in reference to maternal deaths. I have taken the counties in which the midwives are most active and figured the percentage of the births they have reported, and I find the rule to be as the percentage of births reported increases there is a corresponding decrease in the maternal death rate. For example, in 1923 Moore County midwives reported 44.3 per cent of births in that county; Wake County midwives reported 28.2 per cent in their county. While in Moore County there was a maternal death rate of 3, in Wake the rate was 7.5—over twice as high. Madison County midwives reported 41.1 per cent of births, while Durham County midwives reported 7.2 per cent, but in Madison the maternal death rate was 1.6, while in Durham it was 11.3—nearly 8 times that of Madison. Columbus County midwives reported 63.3 per cent of births, while Beaufort County midwives reported 47.2 per cent; yet the death rate in Columbus was 6.1, while that in Beaufort was 8.5. In Wilkes County the midwives reported 41.4 per cent of births, while in Johnston County they reported 30.4 per cent; in Wilkes there was a maternal death rate of 4, while in Johnston the rate was 9.1. And so I have found the rule to be—*a higher percentage of births reported by the midwives means a lower maternal death rate.*

But in order to offset any conclusion you might entertain in your minds as to my running a brief for the midwives of our state, I will call your attention to a glaring exception to the rule I have just stated. In Hoke County the midwives reported 64.5 per cent of all births, and that county had a death rate of 20.2; incidentally the

highest in the state. All these mortality rates are figured on 1,000 births.

Now if the blame for the high maternal death rate of North Carolina cannot justly be laid at the door of the midwives, whence does it arise? After a careful study of this question, it is with exceeding regret, brethren of my profession, that I am forced to agree with Dr. Edward P. Davis, when he says: "*The family physician is responsible.*" This is indeed a serious charge against us as the conservers of public health and physical welfare of our state, especially when it can only reasonably be laid to the lack of individual professional attention and technic—or, in other words, professional negligence, which according to the general advancement and knowledge of medical science with which the physician stands charged, is nothing short of criminal.

It is high time we are arousing ourselves to this fact and to its remedies. What are they? Here they are on three fingers: (1) Prenatal care; (2) Equipment; (3) Aseptic technic.

Under the head of prenatal care, I shall discuss briefly what I consider the four principal things to do.

1. First examination. As early in pregnancy as possible see your patient and make a thorough examination of her, making a record of this examination in a book carried with you for that purpose. This book should be divided into twelve sections, one for each month of the year, giving each patient a page so that her record may be accurately kept on it. Be sure to fill out a card from the State Board of Health and send it in, so she will get the nine letters sent out from Raleigh, which will be highly instructive and interesting to her.

2. Diet the patient. Especially in recent years, I have found that a great majority of my patients have been inclined to eat entirely too much. If there be one thing of most importance for the safety of a pregnant woman it is the restriction of her diet. After she gets over the first few months of nausea and vomiting, say from the fifth month on, many women will literally kill themselves eating. Remember, she should not add more than one-thirteenth of her original body weight while going with child.

3. Blood pressure. Keep an accurate record of her blood pressure every month for five months, then every two weeks. Remember a rise indicates toxemia. I find most women run from 115 to 125 or 130 normally. A rise to 140 means trouble, and to 150 is alarming. Such a patient should be put to bed for four days with only water and lemonade; cream of tartar, soda, and salts in A. M. Take the blood pressure at the end of the fourth day and you will find it greatly reduced. I have recently seen a patient have a drop from 192 to 142; another from 158 to 118. I have been referring to systolic pressure.

4. Urinalysis. Take urinalysis every three weeks until six months, then every two weeks. Advise the patient how to select the specimen so as not to have mucus and vaginal secretions. If it starts

to the bad, think of her diet, not of medicine, for outside of laxative and purgative medicines there is nothing to give that is beneficial to a pregnant woman.

Under the head of equipment, I shall merely mention what every physician doing obstetrical practice should carry to be efficiently equipped. The following is reasonable: Cap and gown; two hospital solution bowls; an agate saucer 6 inches in diameter; two pairs of rubber gloves; ¾ yard of rubber sheeting; 6 Kelly clamps; two pairs of scissors, straight and curved; thumb forceps; 2 luer hypo-syringes and needles; needle holder and assortment of surgical needles; catgut and silkworm-gut sutures; liquid soap or cake of Lifebuoy; scrub brush; can of ether, inhaler; ergot and ergotole; pituitary extract; bulb syringe; ball of wrapping twine; bottle of alcohol; rubber catheter; 5 yards sterile gauze; sterile bandages for uterine pack; lysol, bottle of sterile vaseline; baby scales, and obstetrical forceps.

Finally, aseptic technic for the home. Before time for the confinement of your patient have her prepare old soft cloths for vulva pads, folding them about 4″ x 10″, also 2 pieces of cloth about 2 feet square; fold square. Put these into a sack, boil for 10 minutes, press water from them, and bake in stove until perfectly dry. Now the preparation of the patient. Have S. S. enema given; clip and give her local bath; then sponge off with 1 per cent lysol solution; then with clamp, sterile gauze, and alcohol cleanse her off around the clitoris and sides of the vulva. Make a string four double out of wrapping twine for tying the cord; wrap this around your scissors and clamps, thus making them into a small bundle. Then place your gloves in bottom of thick cloth sack, fingers in same direction, fold the sack over, tie all into one bundle, and boil. Scald your basins and agate saucer with boiling water. The bed should then be prepared as follows: Oil cloth next to the mattress, then the sheet; on this put your rubber sheet, then the paper pad, and one of the 2 feet square sterile cloths on top. Scrub your hands well, then go through the lysol solution you have prepared in one basin and put glove on left hand. See that the bed clothing is folded about half-way below your patient's knees, or lower. Examine your patient. The sac of waters ruptures, is dipped up with agate saucer and poured into slop jar; the head is delivered between the pains; the baby is seen after the water is dipped up. The cord is clamped, tied twice, and cut in sterile cloth so blood will not fly off on everything. Pad is then slipped down and folded back from bottom, and one basin placed against the patient to receive the placenta. Next bathe patient off with hot lysol solution, place a new pad under her and a sterile vulva pad. After baby is oiled and sponged off, bathe the cord with alcohol and dress with sterile gauze, place drops in eyes, and fill out the birth certificate. Watch the mother for one hour for hemorrhage, and keep her on her back for three hours.

I have attempted in this short treatise to set out in a brief and general way what I would have you understand as aseptic obstetrics

as applied to the home. I firmly believe, and you know of your own knowledge, that the best place for delivery is the maternity ward of some hospital, but due to a lack of space therein, and often a lack of financial means on the part of the patient, it is impossible for a large percentage of our prospective mothers to avail themselves of hospital treatment in labor. You will also agree that the superiority of the hospital over the home lies in aseptic treatment. Therefore it logically follows that the next best policy is to carry the superiority of the hospital into the home as far as possible, and, to accomplish that, I recommend to you aseptic obstetrics in the home, with the firm conviction and belief that it offers, at least at present, the only feasible solution of lowering the maternal death rate in North Carolina.

DISCUSSION

Dr. J. W. Williams, Washington: Dr. Ross spoke of Beaufort County and its midwife problem. I read a paper yesterday on our infancy and maternity work. We have attempted to put our plan on in a little different manner from the regular work throughout the state. At the very beginning we wanted to get a living, healthy baby into the world and not leave the mother an invalid from the ordeal. In studying our midwife problem the first thing that impressed us was that although 48 per cent of the women were delivered by midwives, yet our mortality rate compared very favorably with the counties that had fewer deliveries by midwives. I was glad to hear Dr. Ross bring out the fact that the midwife is not losing so many mothers, after all. As a health officer, I was afraid to make that statement to the doctors in advocating the plan under which we proposed to carry out our work. The doctors met and frankly discussed conditions in our county and drafted a law by which we proposed to control the practice of midwifery. We named the kind of a case the doctor *shall* attend. We do not tell the patient that she cannot have a midwife in certain cases, for instance, where there is a history of having her babies taken, or edema, blind spots in front of the eyes, profuse bleeding, etc. We do not tell the patient, but we have taught the midwife, by careful instruction in class after class, that she cannot attend that kind of a case. We went to the doctors and told them that we were undertaking this and would see that it was carried out, that we would tell every midwife what she could and could not do, and that we wanted every case in the hands of a clean, competent physician. Now, suppose we should get a case that could not pay an obstetrical fee? One doctor proposed that, as nurses are going to see pregnant women and insist upon their having doctors, and as the nurse is going to care for the indigent, they could afford to deliver the indigent free of charge. We do not ask them to do that, but to accept a fee of half price that we will pay from any funds we might secure. That is the program in Beaufort County, and the doctors are co-operating to a man and by it we are putting obstetrics into the physician's hands. The section yesterday paid me the compliment of ordering the laws printed, to get them into the hands of every county society of the

state. They seem to think it is a good idea. I am not talking to health officers this morning; I am speaking to practising physicians. If they do put it on in your county you will have this: A trained nurse going into the homes of pregnant women and advising them to have a physician at the time of delivery and early in pregnancy, and not have the midwife. I want to bespeak for that county nurse the co-operation of the general practitioner. Help her. She needs it; she is working for you; she is a direct agent of yours. Our nurse, when she goes into a home, will take a specimen of urine and carry it to the physician with a history of the case, and if it is an indigent case she will say: "Here is a woman who says she had rather have you with her. Here is her history, If you do not care to call on her, just outline your treatment and I will see that she carries it out."

Another point I should like to bring out: Our midwives are taught how to clean up, to keep grease off the cord, and many little points that we have drilled into them. If you find one who insists on using boric acid, because we have taught her to do so, and it is better than dirty lard, let her use it. In other words, do not tell her some one has been teaching her wrong methods after the county physicians have said what and how she shall be taught. I want to beg the doctors of the state to assist all they can, because we are going to put obstetrics into the physicians hands. Whether more women die or not, we believe that is where it should be.

Dr. J. E. Kerr, Winston-Salem: I want to ask how many doctors are carrying pituitrin in their obstetrical bags? I want to say that for a year or two I have been using this practise, which I think is worth while: In preparing for delivery I invariably charge my syringe with a half or perhaps one c.c. of pituitrin, not necessarily for use (for I throw away perhaps ninety per cent of the pituitrin that I buy) but the need may arise immediately, and in case it does you want to be ready. If I use it at all it is generally used in the third stage of labor.

I think it should be used in the third stage of labor if there is the slightest indication of hemorrhage or if uterine contractions are not regular and strong. I keep the syringe charged with the pituitrin for one hour after labor is over. It is the last thing I discard before leaving the case.

I think every obstetrician should remain at the bedside of his patient for at least one hour after delivery.

Dr. W. P. Herbert, Asheville: I was very much interested in Dr. Ross's paper, and particularly in the statement in regard to maternal mortality. As a surgeon, more than an obstetrician, I should like to call attention to the fact that the surgeons are getting a great many of these mothers who have been badly treated. I am not in position to make any statement as to midwives in comparison with doctors, but this thing has been brought to my attention. I think it is a product of the times. It is due to the fact that most doctors are overworked. Time after time a woman coming in to the surgeon with laceration as a result of childbirth gives a history of

an instrumental delivery. It seems to me that this thing should be taken under consideration. The doctors are in a hurry, in the great majority of cases; they have other patients that are more or less demanding their time, and they do not wait for the woman to deliver herself, in spite of the fact that she may have had two or three children and is perfectly capable of having a normal delivery. They do not wait, but apply forceps, either high or low forceps. I think Dr. Ross's statistics in the cases in which nature took its course are very instructive. I should like to know if there is any way of finding the maternal mortality that follows instrumental delivery. That is all I want to bring out—that if we use instruments a little less frequently we shall have a lowered mortality and certainly fewer injuries.

Dr. W. P. Knight, Greensboro: It seems to me that we might give more credit to the doctor by stating that a great many of these cases are referred to doctors after the midwife has contaminated the cases, and then the doctor has to report it as his case when the patient dies. I do not believe doctors lose more patients than midwives.

Another thing, in nausea in pregnancy we find that women with severe nausea are much more apt to have acute Bright's following, and those cases that have severe nausea in early pregnancy should be watched closely, as they are much more likely to have uremia later. I think the important thing is educating the laity as to the importance of early attention and attention all through pregnancy. I have not had a case of eclampsia in my practice for several years. I am living in a mill town, and do largely mill town practice, but my people have been educated to the importance of this thing, they have frequent examinations of the urine and get instruction both from the physician and from the welfare nurses as to diet and mode of living, and the eclampsia case is almost a thing of the past in my community. So I think the important thing is for the laity to understand the necessity of attention all the way through the period of pregnancy. If they could be made to understand the importance of this prenatal attention we should have very few cases of eclampsia. Of course, the diet, as suggested, is one of the very important things—looking after the diet and elimination all the way through, not waiting until the last month.

Dr. J. W. Long, Greensboro: I think Dr. Ross's address shows that obstetrics is on the upgrade, and represents the very best type of work to be found anywhere.

I want to give one explanation of why midwives have better results than doctors, and that is because, as Dr. Williams and Dr. Ross and the other doctors teach, the midwives, whatever else they do, must keep their fingers out of the woman's vagina. Now if the doctors would do what we teach the midwives, our percentage of mortality would be a great deal lower than that of the midwives.

Dr. J. T. Burrus, High Point: I wonder why there should be a compromise? I do not think that the women of North Carolina are any better than the women in other states, and I do not think they are any worse. If there is any ordeal through which a woman has to go that should demand the most careful and most painstaking and most considerate thought, it is when she is giving birth to her child. I do not see why, in passing through this ordeal, that is important and that should have the very best care, there should be any compromise on the midwife question in North Carolina. I believe that every woman is entitled to a doctor, and I do not believe that any midwife is as capable of taking care of the woman in confinement as the worst doctor we have in North Carolina. If that is true, why we are in a very, very pitiable state. The fact that this percentage has increased with doctors has been explained—that many times we are handling other conditions, we are handling infections of all kinds, and are careless, and are not giving the pains and attention that Dr. Ross is giving to asepsis, and it is true that when these women run into complications then the doctor is called, but it seems to me that the doctor is the safe person to be with the woman when her child is born. It does not seem to me that we should countenance lack of training and lack of competence in this branch more than in any other. As you know, a woman may be a good nurse, she may be able to look after a case of uncomplicated pneumonia, for it will take care of itself, but it is the doctor that is needed when complications do arise. I hope some day we shall awaken and have a law in North Carolina wiping out this pernicious practice by midwives. I do not know when it will come, but I believe it is going to come. I feel if it can be carried on, as Dr. Knight and Dr. Williams suggested, in an educational way, and they can, by their welfare work through the nurses, educate the people to the importance of having the very best that they can obtain in passing through this ordeal of childbirth, in a few more years the people will themselves demand the eliminatinn of these incapable women that are calling themselves midwives.

Dr. Richard W. Spicer, Winston-Salem: I think, in this matter of maternal mortality, when we stop to think that more women lose their lives every year due to childbirth than from any disease except tuberculosis (that is, between the ages of fifteen and forty-five), and that every year there are 112,000 children born dead in the United States, and 100,000 that lose their lives in the first month after birth, I think it is time that we do something to lower this mortality. It is true, as the Doctor says, that there are only two civilized countries that are behind the United States in maternal deaths, the United States standing fourteenth, but that is not because we do not do good obstetrics in the United States. In isolated sections of this country, particularly where we have good clinics, we have statistics that will rival those of any other country. Now, North Carolina is badly behind in the prenatal work. I think we have not many prenatal clinics, even in the cities, much less in the

rural districts. I think there is not much prenatal work done in rural districts in any of the states. Certainly in the South we are far behind in that. When we get the people better educated, then they will demand better obstetrics from the general practitioner I do not think it is true that the midwife gets better results than the doctor; I think the reverse has been proven. The way in which we are going to reduce this mortality, as I say, is to have more prenatal clinics developed. Some doctors may fight this plan. One told me yesterday that county health officers were going to take all the obstetrics away from doctors doing rural practice. In Forsyth County we just instruct these mothers in the proper care and the way to take care of themselves, and what they should do if certain symptoms develop. We endeavor to make a complete physical examination of these mothers on the first visit, taking pelvic measurements at that time. We endeavor to reduce the incidence of eclampsia. We know that can be done. We know that eclampsia is a preventable disease, and it is really a reflection on the profession when eclampsia develops. I know in the Chicago Lying-in Hospital, out of forty thousand deliveries, they never had a case die of eclampsia. That is also true in other places.

Now, about making vaginal examinations, as Dr. Long has said, I believe that is where the mortality comes in. The midwife does not make them, whereas the doctor, with his knowledge, does make the examination, and not always under the best conditions. I believe if you do it under the best conditions and with proper precautions it does not make any difference. We had 150 or more deliveries on outside cases a month at the New York Lying-In Hospital. Our morbidity included all cases with 100.6 temperature for 24 hours, and these cases were examined not once but repeatedly by students, but they were properly prepared. A nurse was taken along, and the patient was shaved, etc., and there was scarcely any difference in cases with regard to morbidity whether delivered outside or inside the hospital.

I think with these prenatal clinics the doctor will not lose anything, but the clinics will really be a benefit to the doctors.

Dr. E. R. Hines, Rocky Mount: I abhor the practice of midwifery, but, when the midwife is there, provided she does not make a vaginal examination and infect the woman, especially if there is not a freak presentation, she is in better condition to deliver normally than a doctor with the *too early* use of pituitrin (as in the first stage of labor), resulting in a tear of the cervix or a tear of the perineum. The too early use of pituitrin, with a tear of the cervix, may result in a cancer in later life. A tear of the perineum may result in a prolapse.

Dr. E. R. Hardin, Lumberton: I am glad that some of the members have risen in defense of the doctors on this question, because I do not believe midwives have a lower mortality than physicians. In spite of all available statistics, I believe that is a fallacy, because the statistics you have on the midwives' activities are practically

worthless. We all know that many midwives do not report cases, except in a few counties where there are health officers to make them report.

I know that in our county they got practically no reports from certain sections for a period of years, and if that is true in our county it probably is of others. We also have to consider that the doctor takes care of the complicated cases, that are thrown into his hands by the midwives, so you see how unjust such comparisons are. Personally, I believe the cause of our high mortality is the midwife, and that it will be proven when we get definite and accurate statistics. If that is not true, why should fourteen other counties have a lower maternal and infant mortality than ours? It is largely due to the fact, I think, that the European countries years ago established courses of rigid instruction, training, and supervision of midwives. In Germany and Japan and a few other countries the instruction and training that the midwives get is far ahead of that given the average graduate in medicine in this country. We know that our problem is that of the midwife. As to the elevation of the requirements for the general practitioner, I believe the doctor over here hit the keynote when he said that as the public are better educated they will demand better service on the part of the medical profession, and when the public comes to the point where they will demand better service and are willing to pay for it, they will get it. The medical profession will provide it.

Dr. Ross, closing the discussion: Just a word in reference to Dr. Williams' remarks about this aseptic treatment. Any woman with ordinary intelligence will be glad to make preparation for this technic. A practical nurse can prepare the patient and the bed while you are scrubbing, etc.

In regard to giving poor treatment to a charity patient, I do not attend any woman without using sterile gloves. If I deliver a negro woman I boil my gloves, and I have boiled them in a tomato can on fire coals. I contend that every woman should have aseptic care.

ECTOPIC PREGNANCY

J. W. McGehee, M. D., Reidsville

The first mention of ectopic pregnancy is by Abulkasim in the tenth century, and Rialan, in 1626, refers to several cases. Since then the subject has been frequently quoted, and recently, since operative interference has become common, an enormous literature has accumulated.

Extra-uterine pregnancy is quite frequent, and occurs in lower animals, ape, cow, sheep, bitch, and horse. Many cases of rupture of the sac, or tubal abortion, and spontaneous recovery undoubtedly occur, and pass under the diagnosis of appendicitis or abdominal colic. "Prostitute's colic" is surely often of this nature. It is more frequent in city than in country practice; often after the thirtieth year; frequently after a long period of relative sterility; and in

women who have had an antecedent pelvic disease. Repetition of the accident in the same tube and in the other tube have been reported, and intra-uterine and extra-uterine gestations may coexist. The actual causes are unknown, but the most probable causes are salpyngitis, pelvic adhesions, infantile tubes with lack of cilia, external wandering of the ovum, diverticula and accessory tubes, decidual reaction of the tubes, and diseases of the corpus luteum (Frankel and Opitz). We find these interesting facts reported at Johns Hopkins Hospital. Fifty cases of ectopic pregnancies operated on from 1917 to 1922. White 33, negroes 17; average age 26. One colored patient is admitted to hospital to three whites, so it is evident ectopic occurs more frequently among negroes. A previous pelvic inflammation was ruled out in only seven cases. Metrorrhagia varies from a few days to five months. History of pain in every case except two. In thirty-eight cases the pains were severe. In two the pain was slight. Fainting occurred in three cases. Vomiting occurred in nine cases. In no case was there bluish discoloration of the umbilicus. Tubes and ovary removed in thirty cases. Tube alone removed in nineteen cases. Immediate operative treatment was more successful than the expectant plan of treatment.

The ovum may develop in any part of the lumen of the tube or in the wall of the tube. The tube is the most frequent site, but it may also develop in the ovary or in the wall of the uterus. The fertilized ovum begins to develop, and the muscles of tube do not develop, as in the uterus, so we have in from two weeks to three or four months a rupture, with more or less marked symptoms. The fertilized ovum may be near the proximal end of the tube and abortion may take place through the uterus, or the implantation may be in the end of the tube and the aborted membranes pass into the abdomen, where they are absorbed and we never know we have had a tubal pregnancy; the same is true of the ovary or of an interstitial uterine pregnancy. The earlier the abortion the less marked are the symptoms; the later the abortion the more marked are the symptoms.

SYMPTOMS

In the early cases you will get a history of pain in one or the other side of the pelvis, possibly a history of having missed a period, or you may have a metrorrhagia. The uterus in these cases is not enlarged and you are unable to detect any mass by the side of the uterus. In the advanced cases, where the pregnancy has advanced from a month to four months, the pain is more marked and more persistent, varying from a dull pain to a sharp, excruciating pain. The menstrual flow may be absent for two months and then begin, not of a bright red color, but dark in color, with some visible clots. The uterus is enlarged, but the cervix is harder than in uterine pregnancies and there is possibly a soft mass at the side of the uterus. If rupture occurs after the second month we have the usual symptoms of an acute pain, nausea, sometimes vomiting, rapid pulse, cyanosis around the lips, cold perspiration, air hunger, subnormal

temperature, later slight elevation of temperature 99 to 101, pinched expression; all of the symptoms of shock and hemorrhage, out of proportion to the visible menstrual flow. Later a hematocele may be palpable in the cul-de-sac.

Diagnosis and Differential Diagnosis

The diagnosis and differential diagnosis are not difficult. In the final analysis, it makes little difference in an acute abdomen whether the trouble is appendicitis, salpyngitis, tumor causing pressure symptoms, obstruction of the bowels, infected tumor of any kind, or possibly an old secondary abdominal pregnancy that is undergoing a degeneration with or without pus formation.

Case 1. Primipara. Married seven years. Was in Washington, D. C.; was taken with a fainting spell, followed by acute pain in pelvis. Had missed her menstrual period seven weeks. She came home within the next few days and improved until she was two and one-half months pregnant, when she suddenly became nauseated, vomited, fainted, and complained of acute pain in the lower abdomen and the usual symptoms of mild shock and small hemorrhage. This last attack was away from home at a party, after enjoying the refreshments. I did not recognize the trouble and treated it as acute indigestion. Within an hour she expressed herself as feeling better, and was carried home in a buggy, a distance of four blocks. A dark vaginal flow began after the second attack and continued until she was operated on, although she had another slight attack three days later and one attack the next day in the hospital, before operation. The abdomen was opened; pelvis full of clotted blood; tube, fetus, and ovary removed, clamps first having been applied to the proximal end of the tube and the broad ligament. Salt solution administered after clamps were applied and the abdomen was closed. The patient made a good recovery, but it was rather slow, as she had lost considerable blood. Two years later she had an eight pound girl; also a boy after four years and another girl after six years.

Case 2. Multipara; age 30, had four children. She gave history of pain in her side, missed two periods, then developed a dark clotted menstrual flow. On pelvic examination I could feel a small soft mass to the side of and back of the uterus. She was sent immediately to the hospital and was operated on before she had a rupture, and of course made a more rapid recovery than the first case. She has since had three children.

Treatment

At the time of the attack give hypodermically morphin grain 1/4 and atrophin grain 1/150, rest, and ice-bag over region of pain. Arrange to take your patient to the hospital and have an immediate operation, as the operative treatment gives better results than the expectant plan of treatment. I have never had a case of appendicitis operated on too soon, but have had several operated on too late. I have never had a case of ectopic pregnancy operated on too soon, but have come dangerously near having one operated on too late.

Discussion

Dr. J. W. Tankersley, Greensboro: Dr. McGehee's closing remarks contain more wisdom, I think, than anything else that has

been said this morning—not to make your diagnosis too late, and get your patient where she can be operated upon. I collected a series of 76 cases several years ago, and out of the 76 cases had five deaths. Those cases occurred mostly in the thirties. Practically all give a history of having gone over a rather long time without any pregnancies. A woman may have one child and go seven or eight years before becoming pregnant again, indicating that there is something wrong with the function of the tubes or the patency of the ducts, possibly some inflammation. I believe in most cases there is some slight inflammation in the tubes. The symptoms, as they come on, should be considered before the rupture and then afterwards. I think it is very important to get the patient before the rupture. In considering the symptoms before the rupture we should carefully take the history, going into the history of menstruation, particularly with reference to having ceased anywhere from two weeks to four or six months, then dull aching in the side. Every one of them, I think, will give you a history of slight vaginal discharge—not a profuse discharge, but slight discharge, with a few small clots. Examination of this discharge will show you shreds of decidua. Examination will show slight fulness to the side, which may be an ovarian cyst or may be a tumor or something else, but the important thing is the missing of menstruation and this slight vaginal discharge with pain in the pelvis. The discoloration around the umbilicus I have never seen. Having made the diagnosis, then we can proceed to operation. If we wait until the tube has ruptured, then there is the question as to whether we are going to wait until the patient recovers from the shock following the rupture, or operate at once. My personal opinion is that we should operate at once, as soon as we make the diagnosis, whether before rupture or afterwards. It is true that some of these cases rupture into the abdomen and it is absorbed. I had one case in which I removed a lithopedion which the woman knew had been in there for two years. It was a five or six months' fetus, and hard as a brick.

Some men will tell you they get just as good results by waiting as they do by operating, but I must confess I do not. My best results have been secured by operating as soon as I make the diagnosis.

Dr. B. C. Willis, Rocky Mount: I think a very important thing is to leave the liquid blood in the abdominal cavity. I quite agree with Dr. Tankersley that these people should be operated upon immediately, as soon as the diagnosis is established, and the blood should be left in the abdominal cavity. Auto-transfusion is a very important thing, as well as hypodermoclysis. We can not tell when these cases are going to bleed to death, and the safest procedure is immediate operation.

As to the incidence in the white and the colored race, we have found two colored to every white in our series of cases, and we consider that due to the prevalence of inflammatory conditions in the colored race.

Dr. J. W. Long, Greensboro: When we consider the physiology of pregnancy, the wonder is that there are not more tubal pregnancies than there are, because we have been told by men who have studied the subject that conception always takes place in the tubes. That is where the spermatozoon and the ovum meet and get married, and then they travel back to the uterus. If something happens, if the road is not good, they fall by the wayside, they park by the roadside too long, and then we have an ectopic pregnancy. In any pregnancy, both normal and ectopic, we have two parts to the placenta, maternal and fetal. In tubal pregnancy the maternal part of the placenta develops in the uterus. When rupture occurs this part of the placenta is expelled and we think the woman has had an abortion. That is something we should be on the watch for. I have operated on between 90 and 100 cases of extra-uterine pregnancy, in every class of society from the negro cook to the governor's wife, and have had only one death.

Dr. James T. Taylor, Madison: The surgeons are good enough to outline the treatment for us, and we are grateful for that, but the general practitioner is left to make the diagnosis. All these papers this morning have been instructive. Some one said that the doctor who gets a small fee does small work, but I do not think that is the case at all. I think the doctor who goes on obstetrical work does the best he can, even if he gets nothing.

As to the diagnosis of this condition, my experience has been that instead of having missed a period, patients menstruate ahead of time, possibly two weeks after a regular period. They have nervous symptoms. They do not have pain until the last stages, before the rupture, and then get the shock. With this irregular menstruation and slight vaginal discharge, if we have the nervous symptoms that go with pregnancy then we should certainly suspect extra-uterine pregnancy. Of course, diagnosis by the physical findings in the early months is impossible, and we have to go more by the history than the physical findings alone.

Dr. B. C. Nalle, Charlotte: I had a case of ectopic pregnancy in a woman who had had an ovary removed when a girl of seventeen. Later she married and had an extra-uterine pregnancy. The tube was removed, leaving her with an ovary on one side and tube on the opposite. Since then she has had two other pregnancies, with delivery of normal children, showing the possibility of the ovum's migrating from the ovary on one side to the tube on the opposite side.

Dr. McGehee, closing the discussion: In regard to leaving the blood in the pelvis at the time the operation is done, that, to my mind, is very questionable. If the blood was always absorbed, with no infection, then to leave it in there would be admirable. But sometimes all the blood is not absorbed, but becomes clotted and later acts as a foreign body, necessitating a second operation.

PYELITIS OF PREGNANCY

Robert L. Felts, M. D., Durham

So insidious is pyelitis in its onset, frequently giving rise to no local symptoms and causing no fever, that one is often puzzled to determine the cause of the malaise, headache, and nausea of which these women complain, associated often with some degree of secondary anemia.

The proper diagnosis is very important, because an untreated pyelitis may become the predisposing cause of an abortion or premature labor, which is serious enough, but when we remember that even after delivery the pyelitis often persists, infecting the kidney, reducing its function or crippling it entirely, then pyelitis of pregnancy must be classed with the more serious complications of gestation.

Etiology: Pyelitis of pregnancy may be the persistence of a condition which has existed since childhood. That a pyelitis of the puerperium is a flare-up of a latent condition existing during pregnancy needs little argument.

There are certain predisposing factors which tend to favor the development of pyelitis during pregnancy. Bacteriuria is present in a considerable percentage of healthy pregnant women. The ureters have been found dilated and filled with urine in about two-thirds of the gravidae coming to autopsy (DeLee). This is caused by torsion, stretching, or kinking of the ureters, due to enlargement and dislocation of the pelvic organs, but not to compression. Owing to the stasis of the urine and the bacteriuria, a pyelitis is rather easily set up; but the infection can reach the parts through the blood stream, from other foci of infection, or through the lymphatics from adjacent structures.

The colon bacillus is responsible in the majority of cases, but other pyogenic organisms may be associated, or may even be the actual cause.

Clinically we may recognize two types, the acute and the subacute. In the acute type there may be a chill or several chills, accompanied by pyemic fever. These patients often have nausea and vomiting, pain in the back and along the ureter, dysuria, frequent urination, and vesical tenesmus. In the beginning there may be almost complete suppression, but soon the urine is increased in amount and contains pus, albumin, and characteristic epithelium and bacteria in abundance. If the kidney structure becomes involved and a pyelonephritis develops, then the general symptoms take on a septic nature, with repeated chills, irregular high fever, rapid pulse, sweats, almost complete anorexia, with prostration and all the evidences of a severe illness.

When the infection is subacute all the symptoms are milder, and frequent urination and evidences of cystitis may exist for several weeks before the pain in the ureter and the kidney shows the ascending involvment of the latter. The tendency in both cases is towards recovery.

The differential diagnosis presents considerable difficulty, especially in many cases of right-sided pyelitis. Conditions simulating pyelitis are cholecystitis, cholelithiasis, renal calculus, Dietl's crisis, appendicitis, ovarian cyst, and salpingitis; but if a careful physical examination is made, together with the urinary findings and the type of temperature, it is usually not so difficult to rule out the various conditions. In making a diagnosis of pyelitis the cystoscope should be used in all doubtful cases. The ureteral openings are swollen and inflamed, and pus is seen flowing from them. On catheterizing the ureter urine filled with pus is obtained. Most patients experience almost immediate relief of pain as soon as the catheter reaches the pelvis of the kidney.

Treatment: The management of the pyelitis of pregnancy usually presents few difficulties. It is essentially a medical problem. These patients should be put immediately to bed and given a bland diet, forcing fluids, plenty of fruit juices, milk, buttermilk, crackers and toast; and given urinary antiseptics, hexamethylenamin grains X, four times daily; hot water bag over kidney area. Postural treatment is often advantageous if the case is a one-sided pyelitis; turning the patient on the opposite side will often tend to straighten out a ureteral kink and favor drainage, and, after all, the main thing to be accomplished is free drainage.

Is is hardly necessary to consider the interruption of pregnancy in these patients nowadays. Since the introduction of ureteral catheterization and the use of mercurochrome or some other antiseptic agent for lavage of the kidney pelvis, most of them get relief from the pyelitis almost immediately, and they continue to improve and carry to term. Very exceptionally is it advisable to interrupt pregnancy.

During the past year I had one case of advanced pyelitis, referred from Dr. Wm. Coppridge's service, at the sixth month of pregnancy. She was admitted in a rather extreme condition, irregular fever, chills, almost complete anorexia, marked secondary anemia. Ureteral catheterization showed pus in the urine from both kidneys. The usual methods of treatment were carried out for two weeks, but her condition remained unchanged, even becoming weaker. We decided it was best to interrupt the pregnancy, and labor was induced at the sixth month. She was delivered of a living child, but the child lived only a few hours. She was discharged from the hospital two weeks later very much improved, but still with some degree of anemia.

DISCUSSION

Dr. C. D. Thompson, High Point: I have just recently treated a case of pyelitis of pregnancy at the second month with Formotone (Breon) intravenously. The results were very prompt and very good, there being complete cure in a very reasonable length of time. She had nausea of pregnancy at the same time, and it cleared up under the same treatment.

Dr. Claude B. Squires, Charlotte: I believe the most important single factor in the treatment of pyelitis of pregnancy is drainage. If the ureter does not drain freely and is not relieved by postural and medical treatment, it is necessary to catheterize the ureter and establish drainage in this way. Ureteral catheterization is now easily done, especially in women, and inasmuch as pyelitis of pregnancy is most often unilateral, the after effect of ureteral catheterization is not bad. As long as there is no obstruction in the ureter and the urine drains freely pyelitis does not occur, as a rule; in other words, in the presence of free drainage pyelitis is not likely to occur. Another important factor in the treatment of pyelitis of pregnancy is the eradication of all foci of infection. This, with free drainage, practically eliminates pyelitis.

However, occasionally we come in contact with patients who do not yield to treatment of any kind. We now have under our care a patient who is eight months pregnant and has had a severe pyelitis since the early months of pregnancy. This patient has had ureteral catheterizations twice weekly for some time, and at times the ureteral catheters have been left in for from 24 to 48 hours. After this, improvement is always noted, and catheterization always gave immediate relief, but the kidney pelves soon filled again and the symptoms returned.

Dr. J. W. Tankersley, Greensboro: I have had considerable experience in pyelitis of pregnancy, and my experience is that you cannot clear up the pyelitis completely until pregnancy is over, but you can carry them through to term. My point is not to catheterize in an acute condition. Catheterization is not a medical treatment, I think; it is surgical, absolutely, and right large surgery. In those cases you cannot catheterize use some of the dyes intravenously. Use hexamethylenamin, gentian violet, or mercurochrome. Small doses, often repeated, will give you good results, though more slowly, but do not throw the patient into that profound toxic condition you see sometimes from the use of large doses.

Dr. L. A. Crowell, Lincolnton: I am inclined to believe, with Dr. Tankersley, that this is a medical condition. I do not believe it is necessary, as a rule, to catheterize. I believe the secret of the whole thing is to make the diagnosis early, put the patient to bed absolutely, put her on liquid diet, with urotropin and acid sodium phosphate. We all know that urotropin does not act in an alkaline medium, therefore we give acid sodium phosphate to render the urine acid. Give it for ten days or two weeks, until the urine becomes distinctly acid; then leave it off and give sodium bicarbonate until the urine becomes distinctly alkaline. You will have to alternate only once or twice that way before you cure the case. I do not believe it is necessary in most cases to catheterize, and, as Dr. Tankersley says, that is surgical treatment. I should persist in medical treatment for some time before catheterization of the ureter.

Dr. I. M. Proctor, Raleigh: I should like to speak of two cases I had. The first was in a woman who had had pyelitis some time

previously, before she became pregnant. She went through pregnancy without any symptoms at all. She had a small amount of pus in the urine, but no symptoms, and went through delivery all right. Later she developed temperature and a chill, and it looked like a blood stream infection. We took a culture and found staphylococcus. Later she developed symptoms in the kidney that had been infected before, and went on to a fatal termination. I mention this to show that a focus of infection in pregnant women is an important thing to pay attention to, because it may cause serious trouble at some time during the course of the pregnancy.

The other case was that of a woman whose husband was killed on the railroad, and who immediately went into shock and unconsciousness. After a day or two she began to show some signs of beginning labor (contraction of the uterus). In other words, she frowned and put her hand to her side, although she was unconscious. We began to think there might be some obstruction there, and catheterized the ureter. Hydronephrosis was the finding.

While I have used the cystoscope myself, it was only in gynecological cases, I think there is, as the Doctor said, too great a tendency on the part of the genito-urinary surgeon to cystoscope too frequently.

Dr. Felts, closing the discussion: I quite agree with those who say they do not believe in catheterization of the ureters in acute conditions, and we do not do that. Work of that kind is surgical, and we refer it to the genito-urinary surgeon.

Pyelitis is a serious disease during pregnancy, and I think is often responsible for other conditions. In early pregnancy I think it may be a predisposing factor to other conditions in late pregnancy, such as eclampsia.

WHEN AND WHY REMOVE THE CERVIX DURING HYSTERECTOMY FOR BENIGN DISEASE OF THE UTERUS

R. L. Pittman, M. D., Fayetteville

It is evident to you, from the title of this paper, that the author does not wish to consider at all the management of malignant disease of the uterus or any of the adnexa. It is evident to all of us, while doing hysterectomy for cancer, that all the involved tissues should be removed as thoroughly as possible. It is my desire to discuss the causes which are not malignant at the time of operation, and to treat such causes by operation in such a way that it will eliminate the possibility of cancer's developing in any part of the uterus which might be left during the operation and would later act as a predisposing cause of cancer.

My principal reason for presenting this subject, which is familiar to us all, is the fact that two years ago, following a careful study of 150 cases of supravaginal hysterectomy performed for conditions other

than cancer, it was observed that 50, or 33 1-3 per cent, were suffering from one to three years afterwards with pelvic discomfort, leukorrhea, cervicitis, endocervicitis, dragging pain of the bladder, or pain in the back, necessitating the removal of the cervical stump. In three cases an epithelial cancer had actually developed in the retained stump. Following these observations, the author's routine has been to remove the uterus in its entirety during hysterectomy in a much larger percentage of the cases than had been his practice previous to this time.

In a series of 110 complete hysterectomies during the past two years, for various pathological conditions, the outcome has been so far superior, both in end results and comfort to the patient, that the author feels justified in making a plea for complete removal of the uterus in preference to a supravaginal hysterectomy.

Some of the advantages claimed by those who prefer supravaginal hysterectomy are rapidity of performance, less loss of blood, lower morbidity, lower mortality, no shortening of the vaginal walls and tendency to maintain the conformity of the vaginal walls, so that deformity is less likely to result. In the author's experience none of the adverse claims are substantiated, and in this series of 110 patients I had one death, which is a little less than one per cent and is no more than occurs in subtotal operations.

Instead of the cervix acting as an aid in maintaining the vaginal vault it is potentially a cancer, and invariably, by becoming hypertrophied and causing continuation of infection into the lymphatic channels in the broad and introsacral ligaments, produces general pelvic discomfort. Complete hysterecomy may be easily, safely, and almost bloodlessly performed, and when the vagina is rendered sterile by the application of iodin immediately preceding the abdominal operation, the chance of infection is greatly reduced. Therefore, when complete hysterectomy is indicated for any cause, anything less than the complete removal of the entire uterus is an injustice to the patient.

As indications for complete removal of the uterus, the following conditions should be mentioned:

1. Lacerated cervix.
2. Eroded, chronic cervicitis; chronic leukorrhea; prolonged menorrhagia; chronic subinvolution with uniform enlargement of the uterus and cervix; questionable malignancy; and bleeding at intercourse.

The advantages to be derived from complete hysterectomy are briefly summarized as follows:

1. All possibility of cancerous changes developing in the retained cervix is obliterated.
2. Postoperative painful conditions of the pelvis due to existing chronic infected cervix are relieved.
3. Mucopurulent bloody discharge from the cervix, which so many times follows supravaginal hysterectomy, is relieved.
4. The cervix, when left, undergoes atrophic changes which also involve the upper portion of the vagina, resulting in more or less

shortening of the vagina and dryness of the vagina itself. This, by many authorities, is thought to be worse than when the cervix is removed.

5. All epithelial cells of the cervix are removed, and the alkaline secretion, which is often very irritating and acts as an irritant to the remaining cervix and vagina, is thereby eliminated.

To sustain the author's contention that complete hysterectomy should be more commonly practiced, thereby relieving more patients of postoperative suffering from chronic conditions existing in the cervix, and eliminating a possibly very difficult and serious removal of the cervix, the following three cases are reported:

1. Mrs. M. C., age 52, admitted to Pittman Hospital March 30, 1920. Was operated on seven years prior to admission for uterine fibroids; a supravaginal hysterectomy performed. Upon examination, on admission, the cervix was enlarged, very irritable, slightly fixed, and bled easily; evident cancer. The cervix was removed, which was a very difficult operation. There was extensive involvement of the remaining portion of the broad ligament on both sides. The patient made a fairly good recovery from the operation and was relieved for several months, dying 18 months following operation of recurrence in the pelvis.

2. Mrs. W. T., age 33, admitted to Pittman Hospital May 1, 1921. General chronic pelvic inflammatory condition existing; uterus, tubes, and ovaries firmly fixed; no malignancy; supravaginal hysterectomy performed. On September 15, 1924, was re-admitted with history of bleeding at intercourse. A small portion of the cervical tissue was removed, pathological examination of which proved it to be epithelioma. The cervix was completely removed. There was very little involvement of the surrounding tissues. This patient made an uneventful recovery and remains well to-day.

3. Mrs. W. P., age 44, admitted to Pittman Hospital January 20, 1923, with posterior uterine fibroid; no bleeding at this time. Supravaginal hysterectomy performed and patient made complete recovery. After a period of 15 months, this patient began suffering from severe pains in the lower abdomen, with a constant bloodstained leukorrhea. Examination revealed a large, indurated, and firmly fixed cervix, one in which there was no question that it was cancerous. Operation not advised. Patient was given radium treatment with practically no relief, and died two months later of metastasis.

DISCUSSION

Dr. J. T. Burrus, High Point: I believe Dr. Pittman is quite correct. In the majority of cases in which we do hysterectomy the patient would be much better if a complete hysterectomy were done, rather than an amputation. I feel that in the majority of cases where hysterectomy must be done these women have previously borne children, and the majority of the cases show very deep erosion of the cervix. Usually the cervix is thickened and the mucous membrane of the cervix is very much congested. In cases where women have not previously borne children and there is no injury to the cervix, I do not see why there should be any objection to leaving the cervix. I should suggest, however, that the mucous membrane of the cervix be left. I

think recently we have done more complete hysterectomies than amputations. I recall a few cases in which we did amputations, and these cases returned with very, very annoying symptoms, vaginal discharge, and frequently bleeding. Two or three cases have shown cancers developing after the uterus had been removed. I believe this point which has been brought out by Dr. Pittman should be seriously considered by us all. I can see that we shall probably save a number of cases of cancer of the cervix if we adopt as a rule the principle laid down by him. In our cases I have seen no trouble whatsoever in removing the cervix. I believe if the round ligament, with the broad ligament, is properly anchored in the vagina, you will find no more sagging, no more postoperative symptoms, than in those cases in which you leave the cervix.

Dr. Pittman, closing the discussion: I do not think I should consider the removal of the cervix in a primipara where there was no involvement of the cervix. It would be well to cone out the epithelial lining. I think even if I considered it a normal cervix I should remove it in a woman well past the child-bearing period. We cannot get by the fact that there is somewhat more risk in doing complete hysterectomy than in doing subtotal hysterectomy, so far as the immediate results are concerned. I think it is a case where the cervix has a whole lot to do with it. If you have a fibroid or intrapelvic condition of any sort, I think the first consideration should be the cervix. If you do complete hysterectomies more often I believe your patient will come back to you less frequently with symptoms you find hard to explain, namely, frequent urination, pain in the back, discomfort in the pelvis, etc.

STERILITY, AND DEMONSTRATION OF SIMPLIFIED APPARATUS FOR TESTING THE PATENCY OF THE FALLOPIAN TUBES

Robert T. Ferguson, M. D., F. A. C. S.,
Charlotte

For convenience of discussion I shall make the following classification of sterility:

(1) Congenital: (a) anatomical deformity, such as hermaphrodism, infantile uterus, etc.
(2) Acquired: (a) self induced; (b) due to infection; (c) tumors, cystic or solid; (d) surgical; (e) misplacements; (f) injuries; (g) dyspareunia; (h) glandular dysfunction; (i) due to male side of house.

The subject of sterility is an ancient one, and in a large number of cases the etiology is as obscure as it was when the first writers described the condition.

That side of the question which interests us principally is the etiology of sterility in married women who are desirous of offspring and who have either been denied this privilege in fetal development

or have acquired it through some unfortunate circumstance associated with disease or injury.

To arrive at the etiology it must be studied from both sides of the house, not stopping after having examined the female partner, for some observers have estimated the cause to be on the male side of the house in as high as 25 per cent of the cases. My experience does not run anything like so high; in fact, I find no evidence to place the blame on the male in anything like that percentage. If there is no anatomical maldevelopment in the male, and the spermatozoa are virile, few cases can be laid at his door. In the case of the female, however, there are so many causes for sterility that it is often hard to indict the proper agency. We know that a great many cases are the result of endocervicitis following infection of various kinds, and when these infections are cleared up a number of them will conceive. I am firmly convinced that few cases of actual infantile uterus will ever conceive. I recently operated on a case of this kind whose uterus was not larger than a small hickory nut and who has been married twice, covering a total period of 14 years. The operation was done for a cystic ovary, and I was surprised to see just how small the uterus was. A prior insufflation had proven the tubes to be patent. This was confirmed by operation, and no cause other than the size of the uterus seemed to play any part in the sterility, as the other ovary was apparently normal.

What role goiter plays in the complex of sterility I am unable to say, but from observation in a number of cases it seems to have some definite part.

One-child sterility is a common condition. I am inclined to believe this is largely due to laceration, infections, and misplacements, either at time of delivery or subsequent to this event.

I believe there are many cases of temporary sterility who would eventually become pregnant but for the use of stem pessaries followed by infection. We all know that many women who are particularly desirous of children remain sterile for many years and finally conceive without having undergone any treatment whatsoever. I merely mention the stem pessary to condemn it. I do not believe it has any well-founded place in the instrumental armamentarium of the gynecologist.

I am firmly convinced that there are few cervices that are not sufficiently patulous to transmit the spermatozoa, though some few may be plugged with mucus and dilatation may be of benefit to these. Certainly dilatation of these would not be indicated in a single instance in married women until the patency of the tubes had been established.

The experience of all operators who have done cutting operations on the cervix to produce conception have been disappointing. These likewise should never be done until the patency of the tubes has been established, for conception is impossible where both tubes are occluded. Neither should abdominal operations be done for re-

lief of sterility, in cases that do not show definite pathology, until the tubes have been tested out.

Insufflation of the tubes has become a very simple operation and one devoid of danger when properly done. After using the Rubin apparatus for this purpose for some months I devised the very simple apparatus which I am demonstrating to you today, and after using this simplified method in a large number of cases, practically without pain, and with no untoward effects whatever, I feel that I am justified in recommending the insufflation test in every case of sterility before any form of treatment or operation is considered.

DISCUSSION

Dr. G. A. Caton, New Bern: I rise to ask if there is not some danger of infection. Suppose, for instance, the tube is very large and the obstruction one of infective material, and the pressure causes this infective material to be extruded from the tube into the peritoneal cavity? That is a thing that might occur, it seems to me.

Dr. I. M. Proctor, Raleigh: This subject of sterility I have been interested in for some time. I think it goes with obstetrics. I must commend Dr. Ferguson for his excellent work along this line, and for this excellent piece of apparatus he has devised. The subject of sterility is a big one and must be covered in a thorough and systematic manner to get good results. I think the trouble with a good many physicians who do not get good results in sterility cases is that they do the examination in a haphazard way, and do not complete the job. You must take up each and every individual organ that plays a part in conception, you must take up the vagina, vaginal secretions, uterus, tubes, ovaries; and by all means you must have an examination of the spermatozoa. I have been doing the Rubin test for several years now, but since reading one or two of Dr. Ferguson's articles and seeing his simplified apparatus, I expect to order the little tube and use that. I have never had any trouble with the patency test. One patient had pain in the shoulder, and another had a little nausea. I have had two cases conceive, one of one-child-sterility. One of them had consulted two or three physicians, and one of them had the tubes obstructed. Both conceived within ninety days after the test. It is very interesting to note this. I think there is great possibility of danger, and I do not think any physician should step into it without studying it beforehand, and then use all precaution, because in dealing with the peritoneal cavity you have to be very particular as to asepsis and as to shock.

Dr. Ferguson, closing the discussion: I should like to say, in answer to Dr. Caton's question concerning infection, that I did not take into consideration in this paper the contraindications for the use of this instrument. I never use it in cases of acute infection, and would not advise you to use it. In a large number of cases I have had no trouble whatever. The patient will get up off the table and go home in perfect comfort. The contraindications for the use of it would be acute gonorrheal infection and, of course, streptococcic and

staphylococcic infection. Another contraindication would be the presence of a very large tumor. In small tumors I do not bother, but go ahead and do the test. In cases of valvular heart trouble I do not use it, because you might have some respiratory trouble. In cases with severe kidney trouble I do not use it, nor in cases where you suspect pregnancy, because it would undoubtedly cause miscarriage.

SYNERGISTIC ANALGESIA IN CHILDBIRTH*

C. L. Sherrill, B. S. M. D.

OBSTETRICIAN LONG'S SANITORIUM

Statesville

"In pain shall the woman bring forth." Ever since this Biblical truth has been handed down to man, men have tried to perfect some method to assuage the pain and anguish incident to childbirth. The first effort at relieving pain was founded in superstition by ignorant midwives of the past ages. Many methods have been tried. Sir James Young Simpson, of Edinburg, Scotland, used ether, soon after its discovery, to modify the pains of childbirth, and a little later he used chloroform. Some of the physicians of nearly a half century ago used powdered opium in the first stages and chloroform in the latter stages. Nitrous oxid oxygen is being used rather extensively.

The most hearlded method of recent years was "twilight sleep," which had many advocates, but on account of the many blue and stillborn babies this method has been practically abandoned. The Potter version has some followers, but as a routine procedure is dangerous and should be practiced only by the highly specialized expert.

The method I wish to describe is safe, and the technic is simple enough that it can be carried out in the home by the family physician. I claim no originality for this method. It was worked out by Gwathmey, Donovan, O'Regan, and Cowan at the Lying-In Hospital of New York City. They tried many combinations before this method became standardized. The technic is as follows:

1. Cleansing S. S. enema. This may be followed by a colonic flush with clear warm water if lower bowel is not entirely empty. Catheterize p. r. n.

2. When the cervix is approximately two and a half to three fingers dilated, and the pains are regular and are three to five minutes apart and are of good duration, give morphia sulphate, grains one sixth, dissolved and sterilized in a small amount of water before it is drawn into syringe containing 2 c.c. of a 50 per cent solution of chemically pure sterile magnesium sulphate. (This solution can be obtained in ampoules.) The hypodermic should be given deep in the deltoid or other muscles, with the needle kept in continuous motion (stimulating infiltration rather than a rigid injection). This is to prevent pain and irritation. Give morphine with the first hypodermic

*Read by title.

only, and state to the patient that the object is to relieve pain. From now on the patient should be kept as quiet as possible, the room should be darkened, and loud talking and noise of all kinds should be avoided.

3. Within twenty to thirty minutes repeat the hypodermic magnesium sulphate (without morphia) and give instillation. The instillation or retension enema consists of quinin hydrobromid, grains twenty; alcohol, drams three; ether, ounces two and a half; olive oil q. s. ad ounces four. The best grade of French or California olive oil should be used. In a recent communication with Dr. Asa B. Davis, chief surgeon Lying-In Hospital, he states: "The hospital is now trying out liquid albolene to replace the olive oil, and using forty-five drops of alcohol instead of three drams, as in the above mixture, and this seems to work as well as the olive oil." This instillation should be given when the cervix is three or more fingers dilated, accompanied by good contractions. Tell patient the object is to relieve pain. Place patient on left side in Sims position. An ordinary rubber catheter, 16 or 18 American, is attached to a funnel or large pressure syringe. Fill catheter with olive oil to exclude air; clamp off catheter; and insert gloved finger of left hand into rectum and introduce catheter until the tube is beyond the presenting part, thus insuring retention. The bottle containing the mixture should be placed in warm water for a few minutes before the oil is poured into the funnel. Remove clamp and give slowly, care being taken not to admit air between olive oil in the catheter and mixture in the funnel. This mixture should be followed by another half ounce olive oil at 100 degrees F., this to prevent rectal irritation. The fluid should pass into the rectum between contractions. During contractions clamp off and tell patient to inhale deeply and "squeeze up" in order to induce reversed peristalsis. Hold a folded towel against the perineum to prevent expulsion. It takes about six to ten minutes to give the mixture. Remove catheter gently, and make pressure during pains for fifteen to twenty minutes. Make no examination within one hour, in order to avoid expulsion. Instillation may be repeated with safety in four hours. Repeat hypodermic of magnesium sulphate if needed. The standard treatment is three hypodermics and one instillation, but the magnesium sulphate may be repeated four or five times if the sedative effect is wearing off or is insufficient. In highly nervous patients, or where long labor is anticipated, the initial dose of morphia should be grains one quarter instead of grains one sixth.

From now on the patient may lie on the back or in whatever position is most comfortable. Place cotton in ears and cover eyes with towel or some dark colored material; keep room quiet. When the retention enema is finished the patients are, as a rule, drowsy and sleeping between contractions. They may be slightly disturbed by the pains, but apparently are not conscious of any real discomfort. It is the rule for them to sleep about four hours and then be awakened by the strong contractions. The hypodermic of magnesium sulphate may be repeated once or twice more if patient is conscious of pain.

If patient seems to be suffering, a small amount of chloroform may be given with the last few pains. This method does not increase the time of labor; the babies breathe normally, and the mother seems stronger and recuperates more rapidly than when going through hours of agonizing pain. By this method you produce analgesia and amnesia, which are principally due to the synergistic effect of the magnesium sulphate and ether. The quinin hydrobromid stimulates uterin contractions. These patients usually remain in a dreamy state and remember very little after receiving the rectal instillation. They are grateful, and many will tell you that if they become pregnant again they will not look upon labor as something horrible. Occassionally some of these patients will groan and toss about on the bed consiberably, but this is the exception.

I wish to report a typical case.

Mrs. F. Primapara; age 25; noticed first pains 3:00 P. M. Admitted to hospital 7:00 P. M. Patient nervous and vomiting. Was given an s. s. enema; at 7:50 was having moderately severe pains every one and a half minutes; cervix three fingers dilated; was given morphin, grains one-sixth, and magnesium sulphate, 2 c.c. This seemed to relieve pain very little, if any. Magnesium sulphate repeated at 8:05. Began rectal instillation at 8:10, completed at 8:16; at 8:18 patient was beginning to feel drowsy; 8:25 pains about every three minutes, duration ten seconds; 8:35 magnesium sulphate repeated; patient drowsy, but not sleeping; 8:45 patient conscious of very little pain, contractions two to three minutes apart, duration ten to fifteen seconds; 8:55 patient drowsy, not suffering; 9:15 patient sleeping; 9:50 patient sleeping; 10:30 patient still sleeping; 10:45 membranes ruptured while patient was sleeping. Patient aroused at 11:00 P. M. with violent contractions, however suffering very little pain, was given another 2 c.c. magnesium sulphate; 11:10 perineum beginning to bulge, patient sleeping between contractions. Was given small amount of chloroform with the last few pains; baby born at 11:55 P. M. The next day the patient was happy from the night's experience and told me she had suffered very little.

It is a sad reality that we are now passing through an age of racial suicide and conception is often prevented on account of the horrors of labor. One of the menaces of the day is the breaking down of home life. Childless men and women are thinking less and less of the home and seeking simply the gratification of selfish desires. Matrimony sits lightly upon them, divorces become more and more common. It is a fact that in our own county of Mecklenburg, for the year 1924, of the sixty divorces granted fifty-five were to couples having no children. The use of preventives is openly discussed and publicly advocated. In one city of our country there existed a race suicide club of young married people. The birth of a child resulted in expulsion from the club. Going against the laws of nature, to say nothing of the laws of God, must result in the weakening of the moral fiber and the physical strength. May it not be that, by taking away the fear and horror of the pains of childbirth, we may not only lesson human suffering, but lend aid to our country in the restoration of

the home-ties and bringing the home back to its old time place of power and influence?

CONCLUSIONS

1. This method alleviates pain.
2. It is safe for mother and baby.
3. It does not prolong labor.
4. It can be given by the general practitioner.
5. By alleviating pain incident to labor may it not be that we can contribute toward lessening the present day tendency among young married people to prevent conception?

I am indebted to Dr. Asa B. Davis, chief surgeon, and the house surgeons at the Lying-In Hospital, New York City, for many courtesies and valuable instruction while there.

SECTION ON PRACTICE OF MEDICINE

Chairman: Frederick R. Taylor, B. S., M. D., High Point

UNIVERSITY EXTENSION WORK IN MEDICINE*

H. W. Chase, Ph. D., LL. D., Chapel Hill
President University of North Carolina

Just a word, if you like, about the history of this medical extension work. Back in 1916 the idea was conceived, I think by one or two practicing physicians in the state, and put in shape by Dr. W. S. Rankin, of the State Board of Health; and President Graham, of the University, though there was perhaps an educational service which could be rendered to busy practitioners by the State University—in other words, if members of the medical profession cannot afford the time, as many of them of course cannot, to go out of the state to the large clinical centers to keep in touch with the new developments in medicine, those new developments, so to speak, might be brought to the doors of the medical profession of the state by a series of summer institutes taking the form of clinics and of lectures by recognized men in the particular specalties which were being taught. So back in 1916 two circuits were organized in North Carolina, each including about six or seven towns, and two men were brought into the state who gave each, during that summer, a series of twelve clinics or lectures in each of these twelve or fourteen centers. These were attended by about seventy or eighty doctors, and the entire attendance ran about eighty-five per cent. In other words, the entire thing was very encouraging. However, the War came on, one thing after another happened, and the project was allowed to lapse until 1922, when it was taken up again. It was begun then on the same basis, with two circuits, and there was a pretty large attendance in 1923. In 1924 it was operated on four circuits, but in 1924 was put back to two, and the idea of the University is to continue on that basis. It seems, so far as we at the University are able to judge from the replies and letters which have come to us, to be proceeding in a rather satisfactory way. I should, however, like very much, and I am sure that every one of us who is concerned in the work would be very pleased, to get any comments or criticisms or suggestions about the work which is going on, or about any phase of it, or any way in which it could be made better for the benefit of the profession. This summer, as most of you know, the work is to be organized again in two circuits. Two men will give courses in pediatrics in six chosen towns in the eastern part of the state, and in six in the western part, and the whole operation will be carried on about as usual. There does seem to be one point in this work which has been the subject of some difficulty and, I think, of some criticism. It is the point most commented on in the replies which we get when we ask for suggestions about the work. I should

*Address delivered before joint session of House of Delegates and Section on Practice of Medicine.

like to pass that on to you, in case any of you are interested in the work this summer, and ask for your coöperation if there is anything you can do in helping to solve that problem. That is material for the clinics. The men have said they thought the work could be strengthened materially if there could be a larger supply of material presented for study in these courses. Of course, that is a problem with which, in a way, the instructors are not very well equipped to deal. They do not know the local sources of material, do not know the tie-ins that you men may have. If the men concerned in the courses, who want to take these courses, would make every effort to see that the supply of clinical material is strengthened, it would mean a great deal, I know, to the strength of the work.

That is the sort of idea, very briefly, in which the University has been interested so far as its present plan for postgraduate instruction for physicians is concerned. I might say that so far as any of us know, it is a plan which originated in North Carolina. It is a plan which has been better worked out in North Carolina than anywhere else. It has been talked of a great deal in other states, and they are slowly coming to take it up. So you men here are responsible for a development which is going to become one of the recognized features of medical service for practitioners throughout the United States. In that phase of the work you may be somewhat interested. There is one other phase which the University has had under consideration, and your Secretary has asked me to say something to you about that this afternoon, because it seems to the University to offer some interesting possibilities. I want to speak more at length about that, just by way of laying the situation before you this afternoon. It is a development which might be, I suppose, described as the offering of package library facilities for physicians on various recent phases of medical development. It is an idea which has come from the University of Wisconsin, in this instance, and which has been developed for a year or two there in that state and by that university. The Extension Department of the University of Wisconsin, in connection with the American Medical Association and in connection with the State Medical Society of Wisconsin, has worked out this plan. The American Medical Association furnishes to the University Extension Department reprints of all important articles which are published in medical journals either in this country or abroad which seem to bear immediately and directly on important points in medical practice. It makes the University Extension Division, so to speak, a repository of those reprints. The State Medical Association puts in something; the University Extension Division subscribes to the leading medical journals (of course, duplicate copies), and makes up on that sort of basis package libraries on various topics, which are sent out to the physicians. I have the titles of the articles in one of those packages, which happens to be on the topic of Insulin. There are about a dozen pamphlets, I should say, which deal with various topics of that sort. Here is one on the timing of insulin doses: "Insulin in the Severer Forms of Diabetes," for instance; "The Use of Insulin in a

Case of Acidosis Following Trauma''; ''The Administration of Insulin''; ''Insulin in Diabetic Coma''; etc., etc.—about a dozen of those things. These packages are sent out to physicians on request, and he has an opportunity to examine that literature. Of course, it is based on the realization that the busy physician often has not much time to keep up with the latest developments in a particular specialty, and here is an opportunity, when the occasion comes, to bring that material, so to speak, in a tabloid form to his door, so that he can have an opportunity to examine that literature. The University of Wisconsin states that this plan has been in operation only a few months.

Each package, they say, contains approximately some twenty articles. The great bulk of this material is supplied through the cooperation of the Wisconsin State Medical Society with the American Medical Association. The University Extension Division receives monthly approximately three hundred reprints from leading American medical journals and from some European publications, which are immediately classified and filed. The State Medical Society sends to the Division from time to time material which is accumulated in the office. In addition to these reprints, the Division receives regularly a number of the leading publications.

This is a second move, as you see, in this matter of immediate service to physicians—in other words, a move to try to bring the literature on particular subjects in a usable form to the man who is is busy about his practice. I present this as an idea which it has seemed to us at the University might be worth your consideration. I do not know how you would feel about it, or what value you would think there would be in it. The University thought it might take a shot at it, but unfortunately the legislature developed some tendencies to economy at the last session and we have not the funds to go into it at this time. This occurs to me—there might be some ways—and I do not know what the best ways are—in which an institution like the University can be of the best assistance to a profession like yours, which is busy, terribly busy, yet which at the same time wants to keep and is obliged to keep in touch with the latest developments in its field. I do not know whether it would be worth while or not, but if it appeals to you I shall be very glad if your association, if it cares to, will appoint a committee which would say to the University, after study of the matter, what it would like the University to do in various ways, what kinds of service it would regard as the most valuable service that could be rendered to the profession. It is, as most of you know, the policy which the University is trying to carry out, to make itself, so far as possible, available to the various professions and groups in the state, and I merely want to say that we are trying to do what we can to be of service to the medical profession. We should like to do more; should like to know what you men think the University could do if there are other forms of service which the University can render and which can be carried through with your coöperation. I do not know anybody who has ess consecutive systematic time to devote toward keeping up his

professional work than a busy doctor has. What can an institution like the University do toward helping you keep up that study? We shall be glad to do anything possible to coöperate with you.

I am very glad to have had this opportunity of presenting this matter to you in this informal way.

Dr. Anderson, President: Can you give us some idea, Dr. Chase, of what it would cost to send out the package libraries, etc.?

Dr. Chase: Our Extension people figured out that a pretty reasonable beginning could be made for about $900 a year. There is the expense of publications which would have to be taken in, overhead expenses, clerical service, and that sort of thing which would have to be provided for somehow.

Dr. McBrayer, Secretary-Treasurer: Would you have some late books on Insulin, for example, or other subjects?

Dr. Chase: Yes, the idea is to pick some representative topics which might be made up in coöperation with a committee, say, or the officers of your Society; topics which are timely and worth while, and get literature on them into the hands of those of your profession who might want it.

Q. Is it your idea that this would be a part of the University library?

A. I do not know just what we would say about that. Probably the University Extension Division would be the best and most effective channel through which the thing might head up and through which these things could be distributed, a sort of clearing house, so to speak.

Dr. Wm. deB. MacNider: Did you say that part of that expense would be borne by the University Extension Division?

A. I said it was hoped that it would be able to put this idea in operation, but it is not able at the present time because of financial inability. It is obliged to be a little economical for the next two years.

Q. Could it be put on a subscription basis, those desiring the service paying a nominal fee?

A. I should think that might be arranged. What I wanted was to get it before you. If you men are interested and want to appoint a committee to work out the details I shall be very pleased, if it has value. The University is not interested in it except in order to help you men.

Dr. Charles L. Minor: Don't you think the best way to find out about it is to offer it to the profession for a year? Unless the profession shows a desire for it it would be an unwise thing, of course. No one doubts that it is valuable, but the question is whether the doctors as a whole would use it, and you can not settle that except by experiment.

Dr. F. R. Taylor: I believe it was announced in a recent number of the American Medical Association Journal that the American Medical Association was trying to furnish these package libraries to fellows of that Association. Their scheme, I believe, was that you

write them what subject you are interested in and they will send you a package library. I wonder if the University could not get out some circulars stating that these package libraries are offered, and if the University Extension Department could not handle the matter perhaps better, because they could preach the matter in season and out, and get the doctors to using these libraries.

Dr. W. M. Jones: I believe the best plan would be to appoint a committee of three to act with Dr. Chase. The work which so far has been carried on by the Extension Department of the University has been successful; it has proved itself so. The work, however small, will take some funds. I think we might appoint a committee to act with Dr. Chase, to work with Dr. Chase in finding out what funds it will take. I see no reason why extension work, particularly along the lines which Dr. Chase has pointed out, of special study along certain lines, should not be successful. We all know that physicians have not the time and facilities for going into certain of these things, and men who are specially prepared can do it and get all the latest data for them. I believe the proper thing is to appoint a committee, and I move that a committee of three be appointed.

Dr. J. H. Smith: I believe that should be amended to give a certain time for this committee to act. I should like to suggest to Dr. Jones that he include in his motion that the committee shall serve at least two years.

Dr. J. Q. Myers: I suggest that if the Board of Medical Examiners have an over-supply of funds they might help out in a financial way.

Motion carried unanimously.

Upon motion of Dr. Edward J. Wood, a rising vote of thanks was given to Dr. Chase for his address.

The following committee was later appointed by Dr. Albert Anderson, President, to investigate the desirability and means of establishing package libraries. Committee to serve two years.

Dr. Foy Roberson, Durham,
Dr. J. Howell Way, Waynesville,
Dr. Wm. deB. MacNider, Chapel Hill.

Chairman's Address

ON THE TEACHING FUNCTION OF THE MEDICAL PROFESSION AS A WHOLE

Frederick R. Taylor, B. S., M. D., High Point

In the last fifty years medicine has made more progress than in all previous history. The great triumphs of this period, beginning with the fundamental work of Pasteur and its brilliant application, and going on through the discovery of diphtheria antitoxin, the prevention of typhoid fever, the eradication of yellow fever from the northern hemisphere, malaria control, and other epoch making events down to insulin, scarlet fever serum, and other great discov-

eries of the present day, are legion, far too many and too great to be enumerated or evaluated here. Yet in the very midst of this most productive age of medicine, and despite strict laws regulating its practice, we see flourishing all about us all manner of irrational, unsound, and often fraudulent cults and isms, commercialized schemes founded on pseudoscience, that attract an astonishing number of patients, including many of a pretty high degree of general intelligence.

We are sometimes puzzled for an explanation of this situation. The easiest one is to quote P. T. Barnum to the effect that the American people love to be humbugged, and let it go at that. Such a cynical explanation, however, is scarcely adequate. Admitting that Barnum was a past master of applied psychology, and that he proved beyond cavil that the American people do like to be humbugged in their amusements, and even granting that many people take the same attitude in regard to matters affecting their health, still, this explanation does not give us the whole truth of the situation. To approach a really adequate solution of the problem we must first get a proper historical perspective. We must remember that regular medicine itself has often been the tool of blatant quacks within the profession, and the agent of humbuggery so highly developed that chiropractic and various other modern cults appear as futile when compared with it.

Excluding the superstitions of the ancient heathen priesthoods, whence medicine arose, it perhaps never developed within its own ranks a more perfect spirit of quackery under the guise of authority than in the seventeenth century in France. True, certain individual quacks, gifted almost to the point of genius, such as Paracelus, Valentine Greatrakes, and others, probably exceeded any single individual of this French group in spectacular ingenuity and magnificent chicanery, but these men defied authority and were a law unto themselves, whereas the group mentioned was supported by the full authority of the Paris Faculty of Medicine. Fortunately, this group had a mighty enemy in the great Moliere, the French Shakespeare, who mercilessly analyzed its quackery and exposed it with matchless satire in no less than nine different dramas, the height of his satiric genius being reached in "Le Malade Imaginaire," which almost wrecked the authority and pomposity of the Paris Faculty, yet still pomposity and authority without adequate basis in fact prevailed in the practice of medicine. However, the achievement of fuller knowledge by slow and painful effort gradually made physicians less arrogant, because more conscious of their own limitations, and here and there some man, with the humility that belongs to true greatness, led the profession upward towards the light.

At about the close of the eighteenth century, Edward Jenner achieved the first supremely great medical triumph, by discovering smallpox vaccination. In the first half of the next century Crawford Long banished the terrible agonies of surgery with ether. Many other great men were by this time working to free medicine from

the shackles of superstition, and before long the light broke, and the art of medicine was founded securely on experimental science.

Even in our own day, however, it is easy to observe the effect of ancient traditions that have been handed down to us. In the old days an air of mystery, a pompous bearing, and a wise look, coupled with a peculiar dress and speech, were considered essential to the successful physician. Translating this into modern American, he had to be a good bluffer to get by, and his safest bluff was to be very careful not to say anything that the patient could understand, lest he discover his ignorance.

I fear that we have not altogether escaped from this unfortunate heritage. Many men today feel that the less they tell their patients the better. This attitude is undoubtedly the correct one in special cases, including most very acutely sick patients, and certain types of psychoneurotics, but *as a general rule of practice, I am convinced that it is not only grossly wrong, but that it functions towards the undoing of the medical profession.* I freely grant that a little knowledge is very often a dangerous thing, but I also admit that there is much wisdom in the command, "Know thyself," and a good deal of truth in the adage that every man is either a fool or a physician at forty; and, I might add, that so far as his personal health is concerned, he is more likely to be a fool. Assuming that he is a fool, whose fault is it? Not always his, by any means. *The regular medical profession is often to blame by the neglect of its teaching function,* which, though one of its most important duties, is probably more neglected than all others. *I would place the teaching of his patients alongside of diagnosis, treatment, and study, as the four prime functions of every real physician.*

I have been accused by one of my friends as doing harm by teaching my patients too much. I dare not say that I may not have made such a mistake in an occasional individual case, though my friend failed to advance a single case in evidence, but as a general proposition I emphatically deny the charge.

Let us spend a few moments in considering how we may teach our patients and the public. For convenience, we may discuss this under certain special heads.

1. *Etiology.* Nearly all physicians are willing to spend some time explaining the predisposing causes of disease, in order that their patients may guard against unnecessary illness. Surely we should be as eager to explain the exciting causes of disease, where they are known, not only for the patient's good, but in the defense of truth, in this day when so many are proclaiming from the housetops that all diseases come from displacements of the spine, or similar sophistries.

2. *Pathogenesis.* This may seem too technical to ever attempt to explain to the lay patient, yet I have seen a number of patients who had previously been told categorically that they needed glasses, who would not get them until a few simple diagrams explained what

errors of refraction are, why they produce symptoms, and how they are corrected.

3. *Pathology.* Instruction in this will necessarily be elementary, but I can see no reason why the person who has some definite pathology should not have that explained to him as much as the healthy school child should be taught physiology, again granting that there are exceptions in special cases.

4. *Symptomatology.* There are many times when we must instruct patients to watch for warning symptoms, such as fatigue, fever, headache, visual disturbances, etc. Patients in whom drugs are being pushed to the therapeutic limit must often be taught to watch for the symptoms which indicate that the limit has been reached. The most extensive instruction in symptoms is usually given to tuberculous patients, pregnant women, and diabetics, and rightly so. The intelligent diabetic should be taught to perform simple laboratory tests, to know the symptoms of hypoglycemia if he is taking insulin, etc.

5. *Diagnosis.* Here the all important thing is to teach the patient that he is *not* a diagnostician, and must under no conditions attempt to be one.

6. *Prognosis.* Is admittedly the most difficult thing in medicine, yet the one with regard to which we are most often expected to express an opinion, to either the patient or his family. On this point I can do no better than to quote the words of my revered teacher, Dr. M. Howard Fussell. He said, "Always tell your patients the truth so far as you possibly can. *Don't* tell a patient with a compensating mitral lesion that he has heart disease and stop there, or you will probably leave him with the utterly *false* impression that he has a dynamite bomb inside of him that is liable to explode at any moment. *Go into detail enough to convince him of the truth* that he can adjust his life to his environment in such a way that he may have a good expectancy."

7. *Prophylaxis.* Surely we should educate the people in every way to prevent disease, yet in this connection it is well to remember that actions speak louder than words, and that when we become careless about reporting transmissible diseases in accordance with the laws, or performing other functions due the public health, we have no right whatever to expect the people to carry out the instructions we give them regarding the protection of the public, or even to give those instructions a respectful hearing.

8. *Treatment.* This should be confined to suggesting general hygienic measures, a few simple remedies for the home medicine chest, and to the special training of special patients, such as the diabetic, who must learn dietetics in its application to his condition, and who may have to learn to give himself insulin and to be prepared to treat any resulting hypoglycemia. In general, self-treatment is to be strongly discouraged, *and adequate reasons given why it is bad.*

This necessity of giving adequate reasons for our views brings me to another topic. I once heard a certain physician say of a consultation that he had had with another physician: "That was no consultation, it was an insultation." When I suggested that he elaborate, he explained that the other man had differed with him in the case, which was all right, but had refused to give any reasons why he differed, which was all wrong. When asked why he differed, he would only reply, "Because that's the way I feel about it," or words to that effect. Needless to say, every consultation should teach both the family physician and the consultant, for that is the inevitable result of a real exchange of ideas between professional men. Dogmatism never teaches anything.

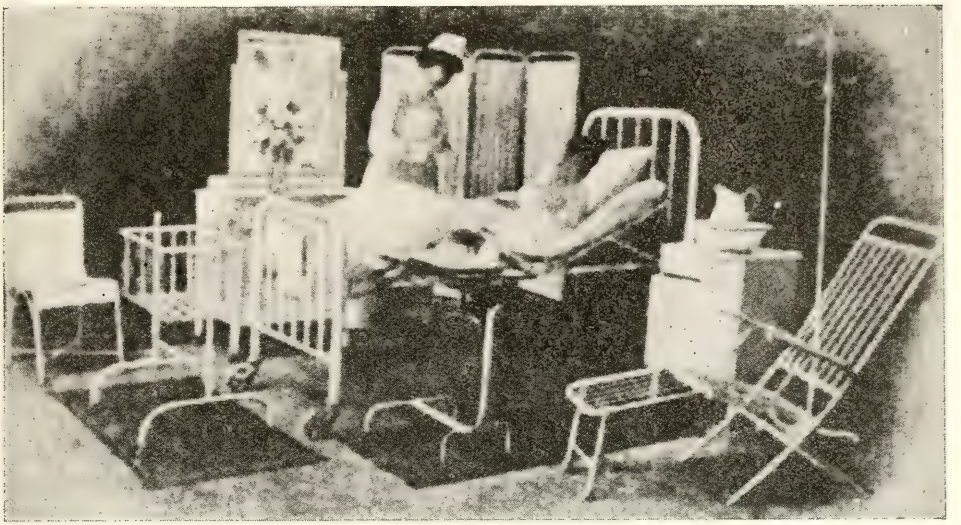
The foregoing has been written from the standpoint of the physician's duty to his patients or his brother practitioners, but the doctor's teaching function should also be considered from the standpoint of his duty to himself. Is he wasting a lot of valuable time? Not a bit of it, for there is no better way to learn than to teach, for when you try to explain something that you think you understand, when you do not understand it, you are at once convicted of your own ignorance, and that is always worth while.

I hope to see the day when this teaching function of the medical profession will extend to ethical advertising, not of individual personal prowess, but of the service that scientific medicine is ready and willing to render humanity. At present the various cults broadcast all manner of misinformation, and there is little chance for the layman to learn the truth. Hygeia is a good beginning, but more and more we must devote our efforts to educational ends. We do not wish to make ill-trained physicians out of our patients, but we do owe it to them to give them a chance to get intelligent information from trained sources, else they will be forced to seek their information elsewhere, and many will, *as the result of our negligence,* become victims of the various cults, the exponents of which stand ever ready to dispense a flood of pseudoscience crammed into them by a few weeks' attendance at some self-styled "school" that guarantees a paying practice to its graduates, and that teaches at least one course supremely well, a course in commercial advertising and propagandism.

A PLAN TO SUPPLY PHYSICIANS IN THE RURAL SECTIONS OF THE STATE (USING RUTHERFORD COUNTY AS AN EXAMPLE)

W. C. Bostic, M. D., Forest City

At a recent meeting of the Rutherford County Medical Society I called attention to a very distressing situation in our county—*lack of medical attention* in the rural districts, suggesting a tentative plan by which the problem might be solved. The county medical society passed a resolution unanimously endorsing the plan and urged me to present the matter to the next regular meeting of the North Carolina Medical Society.

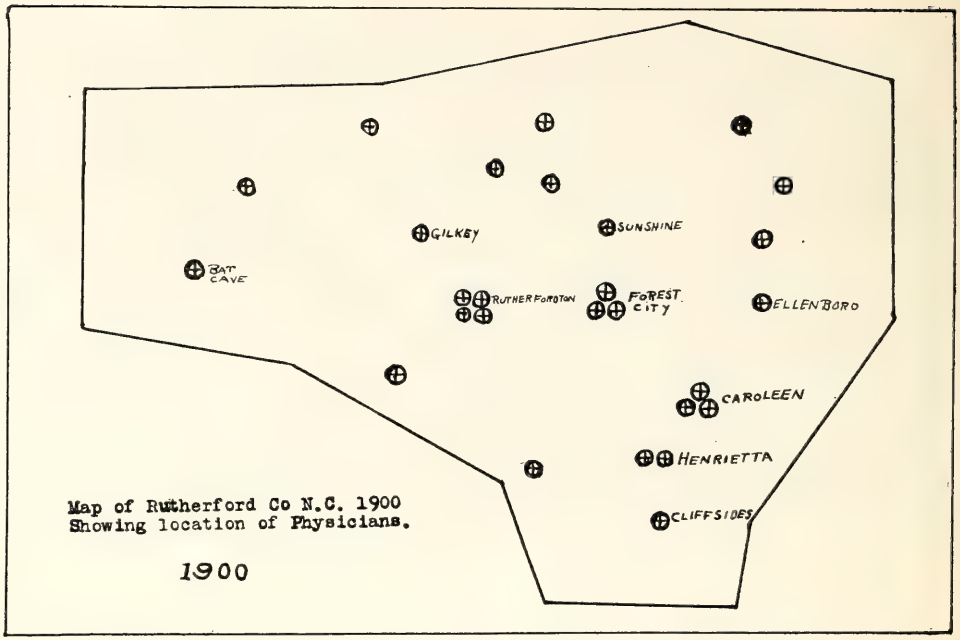


And, in the language of General Pershing when he arrived at the tomb of LaFayette, "We are here." I am wondering just at this time if the General when he uttered these words had the same strange feeling in his knees that I have now, for he realized, no doubt, that he was up against a proposition and a real fight; we realize the same thing today, and after getting the consent of my mind to present this matter to you I made a solemn promise to myself that if there is to be anything like a fight we will "shoot" and then run.

We find we are confronted with an economic problem of great importance. Investigation shows the rural population drifting toward the industrial centers of the state, becoming consumers instead of producers; hence the high cost of living.

These people are leaving the farms because of their inability to procure proper medical attention. In one township in my county about 25 per cent of its population has moved to the cotton mills or other industrial centers of the state. The community spirit and pleasure of living in the country is waning because of this acute condition. The time has come when this problem must be solved, and in order that you may understand the matter of which I am speaking I have prepared three small maps of Rutherford County showing the change in distribution of physicians in the past twenty-five years. We understand the same condition prevails in almost every county in North Carolina, and even throughout the United States.

The first map shows the location of physicians of our county in 1900, before the standard of medical education was raised to the required four-year high school course, two years of college work,



and a four-year course in a class A medical college. The second map shows the present location of the physicians of Rutherford County and of Rutherford Hospital. You will note the number of general practitioners has decreased from twenty-eight to fourteen, leaving the rural districts without a single physician today. The light area of this map shows the territory that is reasonably served by the doctors of the county, notwithstanding the population of this area has increased from 12,000 in 1900 to 29,000 in 1925. The light area represents a six-mile field each way for each physician in the county, or the territory to which he can give satisfactory service. The dark area of this map shows the part of the county with very little or no service at all.

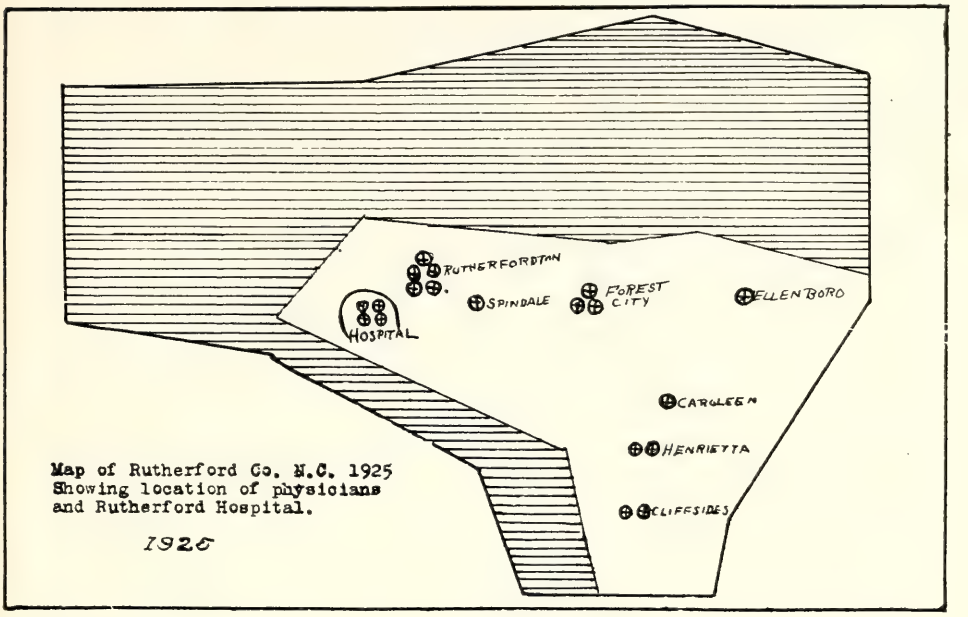
We find the cost of a course in medicine today, representing time, money, and equipment, is $21,000, compared with the minimum cost in 1900, which was $3,000. *In the above staggering figures we find the answer for the shortage of physicians throughout the country.*

The third map shows the location of physicians of the entire county as of 1930, with suggestions for the solution of the problem if carried out by the plan we wish to offer for your consideration and criticism, which is as follows:

First: It will become necessary to establish a class A medical college in North Carolina.

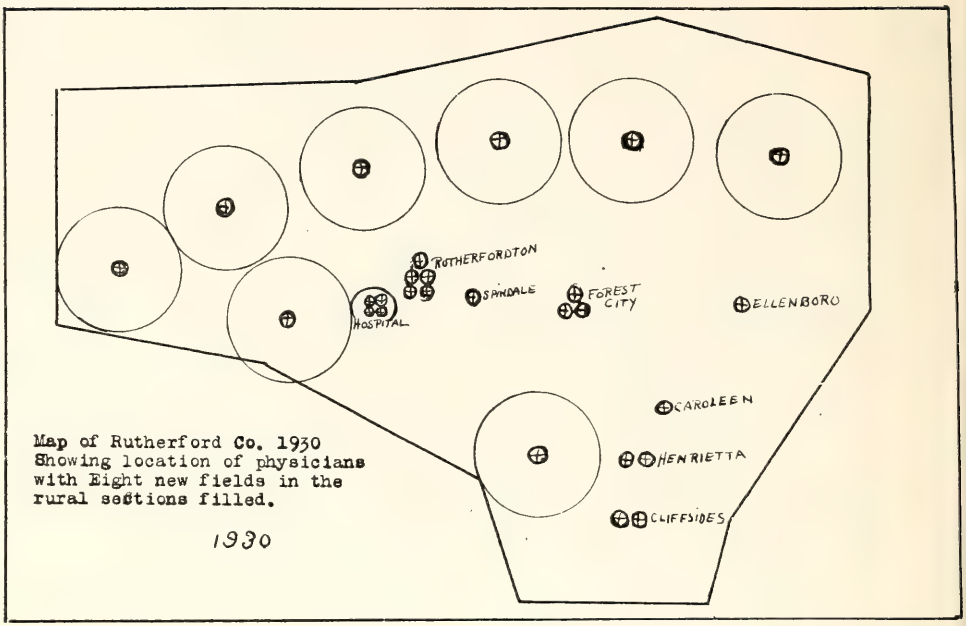
Second: The four-year high school course is provided and within reach of every boy in North Carolina (free).

Third: The county board of health will act as local committee (conjointly with the deans of the colleges) to pass on the qualifi-



cations and fitness of these high school graduates applying for admission and receive a satisfactory bond as guarantee of good faith to insure the completion of this course in college and the north Carolina school of medicine. They will select four to six applicants each year, according to the needs of the county, who will be entitled to a free scholarship, covering tuition and all fees except board, for a two-year course in any of the standard colleges of the state, namely: State University, A. & E. College, Wake Forest College, Duke University, and Davidson College. After completion of the two-year course in any of these colleges the applicant will then be entitled to a scholarship to the North Carolina school of medicine, which will cover the regular standard course as prescribed by the American Medical Association.

Fourth: After completion of the two years of college work and the four-year course in medicine, the faculty of the medical school will issue a certificate (not a diploma) to the applicant which will entitle him to apply for examination before the State Board of Medical Examiners of North Carolina. After the applicant has passed the required and regular examination before the board he will then receive from the State Board of Medical Examiners a *limited license*, which will entitle him to practice medicine in any of the *rural health centers* in any county of North Carolina established by the county and state boards of health. The applicant will accept the *limited license* in consideration of his free tuition in college and in the school of medicine.



Fifth: After the physician has practiced medicine in one or more of these rural health centers for a period of ten years he will be permitted to receive endorsement by the local board, and, on return of his medical certificate and *limited license* to the North Carolina school of medicine and the State Board of Medical Examiners, he will receive his regular diploma and regular North Carolina state license as of date of his graduation and examination before the board. During this period of practice in one of these health centers he will be entitled to all the privileges of the county and state medical societies. He will also make insurance examinations, and act as industrial physician and surgeon for any industries within his field.

Sixth: After five years of practice in one or more of these rural health centers, should he decide to withdraw from this field he will have the privilege of paying back his tuition fees to the college he attended, and also to the North Carolina school of medicine, with four per cent interest, and on payment of the above fees he will receive his diploma, which will entitle him to receive his license before the State Board of Medical Examiners.

The rural fields can be made attractive and inviting by the county board of health, in conjunction with the State Board of Health, making a survey of the needs of each county and establishing districts composed of one or more townships to be known as *community health centers*, numbering one to eight, according to the needs of the county. The citizens of these various health centers will be asked to coöperate in the extension of better medical attention to its people, and help supply a whole-time graduate or pupil

nurse, together with the following equipment, to be used as the case may demand. A linen chest should be provided containing sheets, pillow cases, blankets, towels, gowns, and other dressings; also an outfit consisting of hospital bed, springs, mattress, together with nurse's cot; and other equipment such as hot water bottles, syringes, rubber gloves, etc. The tuberculous patient should be provided with a similar outfit, consisting of a small tent or porch tent, so that he will have the comforts of a modern tuberculosis sanatorium in his own backyard or lawn. He will be removed from his infected room, from the flies, bed bugs, foul-smelling bed clothing, etc., to a little tent with screens and a nice clean cot, and other accessories, such as sputum cup, clinical charts, diet lists, and printed instructions as prescribed by the State Board of Health. With the above outfit any home within ten miles can be hospitalized, or made quite as comfortable as a room or a ward in a hospital, within one hour.

With such equipment as mentioned and shown in the cut we shall be able to teach sanitation and cleanliness, and to bring many of the comforts of a modern hospital to the rural homes of the state. An organization of this kind can be effected and put into force with a very little outlay of money—$300 being a conservative estimate.

This plan will give all the rural sections of our state an educated physician. It also places the college course, together with the regular course in medicine, within reach of every boy with limited means, and gives the boy from the farm and elsewhere the chance of securing the regular course in medicine without lowering the present high standard of medical education.

Interest and enthusiasm in community life will be restored to the people in rural sections when adequate medical attention is insured them. A great economic question will have been solved—consumers will return to the farms to become producers again, thereby lowering the high cost of living.

The cost of the above plan to the state will be but a trifle and is not to be considered seriously. A special tax of one or two cents on every dollar's worth of patent and proprietary medicines, drug specialties, and cosmetics, sold annually in North Caroilna will more than finance the plan. No happier solution of the financial part of the problem can be offered. The money expended in other states for education of our doctors will be retained in our own state. The scarcity of physicians will be relieved throughout the state. The boy with an ambition to study medicine will have the chance of a medical course and the privilege of serving his own, and, as Aycock said: "He will have the chance to burgeon out all that is within him."

North Carolina is proud of her history and the splendid progress that is being made in every walk of life. She soon will have constructed and paid for one hundred million dollars worth of good roads. She pays more income tax to the United States Government than any other state in the Union, except New York and Pennsyl-

vania. Her public school system is second to none in the United States. She has one of the greatest universities, and has provided for the education of her women, her farmer boys, textile workers, engineers, etc., but she has failed to provide for a finished doctor.

Will this, the most progressive state in the Union, allow her rural population to suffer and die for want of medical attention? This plan should be placed in operation at the opening of the colleges in the fall season. The next legislature should provide for the erection and maintenance of a class A medical school situated in the central part of the state, in one of its largest cities.

If we may hope for an early solution of this problem it will become necessary that the medical profession unite on some plan or plans and present a solid front in the interest of this special class of people deserving our best consideration.

We too must hear the Master's command—to preach—to teach —and to heal the sick—and let us do it now *before it is too late.*

"BEFORE IT IS TOO LATE"

If you've a tender message or a loving word to say,
Don't wait till you forget it, but whisper it today.
We live but in the present, the future is unknown—
Tomorrow is a mystery, today is all our own.
The tender words unspoken, the letter never sent,
The long-forgotten message, the wealth of love unspent—
For these some hearts are breaking, for these some loved ones wait,
So show them that you care for them before it is too late.

THE TREATMENT OF PYELITIS FROM THE GENERAL PRACTITIONER'S POINT OF VIEW

K. C. Moore, M. D., Wilson

This title is to a certain extent a misnomer. My idea in presenting the paper was not so much to discuss the treatment of pyelitis as it was to discuss the use of mercurochrome in different types of infections.

The treatment of pyelitis by the general practitioner is often a most difficult job on which to get satisfactory results. The vast majority of the pyelitis I see is in female babies and young girls. In these cases cystoscopic treatment is practically impossible, and we have always had to resort to medical treatment in this type of case. In the adults, medical treatment in my hands has always been most unsatisfactory, and the majority of the cases I have referred to urologists.

About twelve months ago I was called to see a case of puerperal fever, in consultation. The patient was very sick; she had been sick for about three weeks and was running a very high temperature; it looked like she would die, in spite of everything. I suggested that she be given a dose of mercurochrome intravenously. She was being catheterized at regular intervals. When she was

catheterized, about an hour after the dose was given, I noticed that the urine was full of mercurochrome.

The idea struck me that, if after injecting mercurochrome intravenously there was so much showing up in the urine, in such a short time, it would be an ideal treatment for pyelitis in children.

A very short time after that I gave a little girl, seven years of age, weighing about forty pounds, five c.c. of a one per cent solution of mercurochrome intravenously. This case had resisted the alkaline and acid treatment for some time, with very little benefit. Two days later, the child's temperature was normal. The amount of pus present in the catheterized specimen of urine was considerably reduced. A second dose of the same size was given on the third day, and the urine was practically cleared of albumin and pus within four or five days. This case, so far as I know, is absolutely clear up to the present time.

My experience in treating pyelitis in children has been that after getting an apparent cure, later we often have recurrences. In the cases of pyelitis treated by the intravenous use of mercurochrome, I so far have not had any recurrences.

Another case, a little girl eight years old, was treated by the alkaline and acid treatment for several weeks without any benefit. She was given three injections of mercurochrome at four day intervals, with an absolute cure.

This case happened to live in the country and the first dose was given in the home. The subsequent two doses were given in the office, and the mother was instructed to put the child on the car and take her home immediately. When the third dose was given, it was around Christmas time and the mother had promised to take this child to some of the stores to look at the Christmas goods, and she walked her over the town for about two hours. About two hours after I had given the child the treatment, she went to a friend's home in town, on account of the child's being taken desperately ill, and vomiting. I was called post haste and was told that the child was very sick and vomiting a great deal of blood.

When I got there, the child was sick and she was vomiting a great deal of red stuff, which, of course, was the mercurochrome, and not blood. The child was given a small dose of morphia and put to bed, and she cleared up in a very short time.

I have also used mercurochrome in a good many other infections, but the results in the cases of most adults that I have treated so far have not been good.

There was one case, a case of severe toxemia of some description, the exact cause of which was never determined. I saw the case in consultation and suggested that mercurochrome be given intravenously. A dose was given and the case made a very rapid improvement. I did not have an opportunity to follow the case, so I cannot give any details. I have only the report of the physician.

In talking over this subject with several medical men at different times, I have had reported to me cases in which there were very severe reactions after the injection, and for that reason I have hesi-

tated to a certain extent in going forward with this line of treatment. My idea in presenting this paper today was to bring this subject before this body and to hear the experiences of others who might have used it.

Dr. Watson, of Wilmington, in the pediatric section this morning, read a very interesting paper on the use of it in a good many cases. He, like myself, has not had any cases in which there was any reaction to speak of.

Mercurochrome is certainly excreted in large quantities very quickly into the kidney, and also through the stomach in this particular case of vomiting that I mentioned. I believe it is also excreted in the other body cavities.

I feel sure that in a great many different types of infection, in well selected cases, the intravenous use of mercurochrome is an ideal treatment. Yet I don't consider that it is a panacea; in fact, I know that I have not used it enough to be sure that it will do any particular thing. But I do believe that it has a big field.

Dr. Young, of Baltimore, has possibly done more work with it than any one else, or rather, the reports that I have seen from him are more extensive than any one else's, and I believe he is just about as strong for it now as he was in the beginning.

ON THE PURPOSES AND DUTIES OF THE SECTION ON MEDICINE—HOW CAN WE BEST FULFILL THEM?

Chas L. Minor, M. D., Asheville

In choosing this subject for my address today some may think me rash, but I feel that the subject so closely concerns the good of the North Carolina State Medical Society, and is so related to the proper development of medicine, that it is a duty to consider it, even at the risk of raising antagonism among some men whom I respect and like.

The critic is never a popular person (especially if he is of the family) and yet without his often irritating services it is doubtful whether the world would have advanced as it has done.

Gifted (or cursed) with an analytical way of looking at things, he is constantly studying to see in what way they can be improved, and while, especially by the advocates of "things as they are" he is apt to be called a knocker, he at least makes us open the doors of our minds, to see what is outside and to let in fresh air, and his criticisms tend to keep us from falling into that lazy self-content which is so deadly a foe to all progress and the sure beginning of deterioration.

The purposes of the section on medicine may be variously viewed by men of different minds. To a few it is the means of self-glorification or the winning of empty honors. But the wide-awake doctor, who is interested in the society and who is anxious to keep in touch with the latest things in medical progress, looks

upon this section, and on the society as a whole, as a source of stimulus to his mind and to the minds of the men who attend it, and to those who read its transactions, and, if the programs are carefully built up, as they should be and easily can be, every meeting should be a source of untold uplift to the doctors of this state and its transactions a creditable record of our medical progress. Further, if they are sure that they will and can get such programs, there will be no difficulty in having crowded and successful meetings. After many years of membership in many medical associations, I can safely assert that no society was ever a failure when the men attending it were sure of hearnig live, interesting, well written and well delivered papers; and that, conversely, no society's meetings, it matters not who may be elected as its officers, are ever a success where the program is such as to fail to excite the interest and respect of the members. I have attended meetings of this and other societies where the members went away feeling they had been buncoed into wasting time and money listening to worthless papers; and, on the other hand, which of us does not remember meetings whose intellectual and literary level was such that we felt it "had been good to be there"?

In the years that I have practiced medicine in this state I frankly admit that I have had a bad record of attendance at the annual meetings, and some will say therefore that I am not qualified to act as a critic. The reasons are clear enough. First, I have been a very busy man and have found it very hard to get away from my work. Second, the time of our meetings is usually such as to conflict with certain national societies, dealing with the branch of medicine in which I am especially concerned. Third, (let me be frank and outspoken and most of you will admit, I believe, that I am correct), because of the undue amount of medical politics which choke the real purposes of our society. But more than all else, because of the keen disappointment I have felt in the meetings I have attended, where the chairmen have too often let the program build itself, and where I have felt like the man who goes to church hoping to get from his clergyman the message that his hungry soul needs and has come away unsatisfied.

In the collection and able presentation, for the benefit of the members, of a number of well and clearly written, timely papers in which are discussed, clearly and succinctly, some of the innumerable problems of internal medicine, papers which will call forth thought and give rise to able and wise discussion and quicken the minds of all the doctors who hear them, or read them in the transactions, lies the only justification of such a section and society as this, and if our chairmen are sometimes careless, or our members too often too lazy to put their medical thinking and medical experiences into good clear English, or other members are too timid to rise and discuss such papers as offer food for thought (and we should have no others), then it is no wonder if the profession of the state is not tempted in large numbers to take time and trouble and expense to come and listen to ill written, poorly expressed,

badly digested papers which cannot encourage thought and do not open themselves to worth-while discussion.

Indeed, if, as I and many believe, there has been too much politics in this society, may it not be explained on the ground that the medical program has too often not been such as could arouse our interest and that the members therefore have turned their attention to wire-pulling for their friends? I have carefully read the annual transactions, and, while there are always a number of valuable articles, I do not hesitate to say, unpopular though it may be, that the transactions of this society and section have not always been such as should come from the profession of this great and growing state, or such as can creditably represent us in that great forum of medical thought, where we cannot afford to be behind our brothers of other states, where all that is best and most recent in medicine is brought to the attention of the great body of the profession, and where our colleagues throughout these United States will judge us by our fruits. Yet in North Carolina we have a very large percentage of physicians who are an honor to our profession as clinicians, and one or two, I am proud to say, who are doing worthwhile research work and if such men will help the chairman (for the responsibility is not all his) to make the section of internal medicine what it could be and should be it would give us a program that would do honor to our society and to the medical profession of the state, and which would do its share in the study and possibly the solution of some of the many difficult problems with which a physician is called upon to wrestle.

If then, as I have said, we have in North Carolina plenty of men competent to do clear medical thinking and who can put that thinking into lucid, compelling English, if we have other men who, hearing such papers, are willing to get on their feet and, avoiding, save in rare instances, the usual compliments we too generally indulge in, discuss clearly and cogently the ideas that have been presented to them, enriching them by the fruits of their own experience; and if we have innumerable other men, who while they may not have the gift of writing or of talking on their feet, can be stimulated and helped by such papers and discussions, why are our programs so often stale, dull, and unprofitable, our discussions uninteresting and unenlightening, and the resulting transactions in no sense any addition to that great mass of medical thought out of which is being slowly but surely built the medicine of the future? First, as I see it, we doctors, as I have confessed of myself, are lazy, swallowed up in our own practice, and yet not interested enough in it to bring to the great medical market the products of our experience for exchange, so that, when we are approached by the chairman of this section, we with one accord proceed to make excuse.

Then, as to our chairmen (and I need not say that this has no reference to the chairman of today's meeting, who, as I chance to know, has worked hard to give you an excellent program, which should justify your journey here). How much time and thought does the usual chairman of this or most medical societies give to the

careful, thoughtful building up of a really worth-while program? Look at our county societies, or at many, even, of the large interstate societies. The chairman too often waits until the last possible minute, then writes in a hurry to a carelessly chosen list of men, asking them for papers. He has no idea of what he wants the meeting of his section to stress; he is apt to accept any paper offered him with little or no consideration of its content, its form, or the English in which it is written, which, in these days of the stressing of pre-medical sciences and the consequent neglect of a broad education in the humanities and the cultural subjects, is becoming worse and worse in our medical literature. Is it any wonder, with such careless building of program, that we do not interest the doctors, or that an item in a program which gives no clear idea of what its author wants to write on, or giving a doctor's name with "subject to be announced later," does not stimulate any great desire to hear what a man has to say who doesn't know what he is going to talk about? Many of the men who attend these meetings, while splendid and useful doctors, have not developed the trick of writing or discussing a paper, but if the recent graduate will begin early to think out his cases and put that thinking into the best writing he knows how, and if he will then force himself, as a duty he owes to himself and to the profession to read papers or to get on his feet and express in a few words the thoughts his colleagues' papers must stimulate in him, if he is a thinking man, he will by degrees develop the power of writing and of thinking on his feet, and those valuable, intelligent, silent members who can think clearly, even although they cannot talk, will find it more and more worth their while to attend our meetings, until men will crowd to our meetings with the assurance that they will get there new and stimulating ideas which they need to help them in their daily struggle with disease.

I do not doubt the ability of the doctors of North Carolina. I know that a great state like this, if its leaders but realize the truth, can have every year live, worth-while meetings. A poor meeting is primarily the fault not of the president of the society, who holds an honorable but not executive position, which ought, I believe, to come to him only as the reward of good work previously done as the chairmen of a live section; but it is the fault of an unwisely chosen chairman, elected possibly because he is a "good fellow" and popular with his friends, when he should be selected because he is a live, keen clinician who thinks. The section on medicine and every other section has a right to believe that the man they pick out to be their chairman will consider it not merely an honor to tickle his vanity but a duty demanding of him his best efforts. It is his duty and privilege to gather for his fellow members, by hard work and clear thinking, an interesting, worth-while banquet of medical nourishment to feed them withal. Let the man so honored begin the day after his election to consider into what lines of medical thinking he wishes to guide his section. This being settled, let him not be afraid to more or less definitely pick out, not merely the subjects, but at times even the titles, of the papers he wishes on his program,

and to think out what men in the state are most capable of writing well on them. Let him communicate with them at once, within the first month at the latest; asking them not merely for a paper on any subject they choose, for many good men do not know what they can best write on, but often for a definite paper on a definite subject which he knows they can handle well. Many men can give an excellent paper if only a suitable subject is brought to their attention. After the men he has chosen have replied, and from a fairly large experience I know that if you approach them in this way most of them will gladly and successfully respond, let him tackle the time-schedule of his program, figuring out for each paper so many minutes and so much for its discussion. It is remarkable how closely he can come to the exact time needed. Then there should be some time left over for the best of those papers independently offered, but all of which it is neither possible nor desirable to include. In any body of men there are always some eccentrics or antediluvians, or men with obessions or cranks, who are always glad to take up the section's time with the undigested and indigestible contents of their craniums, and the chairman should have the courage to protect his section from such authors.

Read over the transactions of past years and see how many impossible papers have, through the mistaken and weak kindness of departed chairmen, been allowed to waste our time or mar our literature. But, on the other hand, there are unknown men who have valuable contributions to bring to the section who need to be encouraged and to be given the opportunity to get the ear of the profession, and the chairman has a great chance to bring out such unknown talent. Such a program should be built and all but finished two or three months after the meeting, but the chairman's task is not finished by any means, if he wants to be successful and to be remembered as a builder of a stimulating and worth-while section. Men who promise do not always fulfill if they are left to themselves, and he must keep in monthly touch by correspondence with his authors, watching, lest they procrastinate and fail him at the last minute. His enthusiasm must stimulate them and plant in them the ambition to make their individual paper one of the events of the meeting. He must also urge them to choose most carefully their respondents from men who are likely to have something worth while to say on the subject. When the time of the meeting comes, let him have it clearly understood that the time rules of the floor are to be strictly enforced to the minute, for nothing kills a meeting so successfully as a long-winded speaker who doesn't know how to stop and is unconsciously stealing time from all his successors. The weak chairman who doesn't know how to call down the violator of the essential timetable of any medical meeting is as we all know, the assassin of the success of the meeting he is supposed to lead. The firm use of the gavel and the refusal to allow a motion from the floor to break the rule of the society in this matter will do more than any thing else, except the content of the papers, to give a live, snappy meeting

and make the audience go away stimulated and satisfied. In my judgment, tender-hearted, weak chairmen are fully as responsible for making unsuccessful meetings as are poor papers.

From such a well organized and firmly run meeting will go out all over the state, from the men who attend it, an urge towards better medicine that can scarcely be overestimated in its beneficial influence, and men will come to expect a real mental feast and no longer care to pull wires and play politics. The State Medical Society and the section on internal medicine should be a far more powerful influence for good on the medical life of our doctors than it has been, and we have plenty of potential chairmen who, if they will take the trouble and work along the lines I have suggested, which I have tested out on different occasions and which I therefore know will work, can give us annual meetings such as will make us proud to belong to this society. Let us, as I have said, pick our chairman carefully on the strictly business principle that he deliver the goods, and then let us hold him to a high standard of performance. From such men, and not from chronic politicians, should we pick the presidents of our society, and if some men, as seems to be the case, have the presidential bee in their bonnets let them win that honor in the only legitimate way, by showing, by a past successful chairmanship or by outstanding medical work in the state, in private practice or public health work, their ability and fitness to stand at the head of the North Carolina profession.

Some excellent and able men enjoy playing politics just as others enjoy horse-racing or a game of poker, but I am sure I am right when I say that the great majority of the men who come here care not at all for the political game and are wearied when they see some of their good friends injuring the society and wasting so much time on it. Most men come here for a rest from their arduous labors with the sick and suffering and to freshen their minds with the latest medical thought, and are not interested at all whether Jones, Brown, or Robinson shall achieve the honor of the presidency. If in our state we have any research workers, and I think with pride of at least two, and possibly more, who are doing good work in this line, here is the amphitheatre where they should be able to fight for and defend the truth as they see it, may I say that it would well become this society to cultivate more research work in the state and in the South, where it is still far too rare?

If we have wide-awake, keen-minded physicians, and we have many, the floor of the sections of this society should be the place where they should bring their experience to test it on the judgment of their fellow doctors and to clarify their thinking by conflict and friction with other minds.

If we have, and who will deny it, large numbers of pains-taking family practitioners who do not generally tend to writing, but who at innumerable bedsides in this state are doing splendid and too generally unrecognized work, in the endless fight against disease and misery

and death among our people, here is where they should come, sure that they will get the latest ideas in medicine to aid them in that noblest struggle.

Following along the lines that I have suggested, putting aside too much attention to politics, which I believe has been overdone and has therefore held us back, encouraging the growth of our society as a collector and disseminator of medical truth, we shall soon build up our association till its meetings and its transactions will excite the interest and respect of medical men, not merely within but without our state, and will reflect honor on the society which produces them, and on the great state whose medical profession we wish to see standing in the forefront of the army of medical progress.

DISCUSSION

Dr. E. J. Wood, Wilmington: Mr. President, I can't, of course, add anything to what Dr. Minor has so ably told us, but I think the subject matter of his paper indicates that we are about to be divorced from a political organization, into a scientific body, and it is a very hopeful sign. If Dr. Minor will continue to come every year and bring some of the men from his section (who will meet with us when we meet in the western part of the state, but who won't come to us when we meet outside of their section), and if those of us in the eastern part will do the same thing, and if we can forget who is going to be president, and forget that there is such a thing as "peanut politics," I think there is a chance of this society becoming a credit to this state; I think it will be, in its particular place, of as much value to the state of North Carolina as the good roads commission or as the State Board of Health, or as some of the other things that we like to boast about.

We have had too much politics and too little real medicine, and there is no field in the whole United States with as many unsolved problems as we have here in North Carolina. North Carolina is just at the junction of the sub-tropics and the temperate zone, and there are problems of every sort in every branch of medicine, problems that have never been touched, that must be attacked, and there isn't a member of this society who isn't capable of attacking one problem and adding to the sum total of medical knowledge.

If we will take this sermon of Dr. Minor's to heart and read it, and then re-read it, maybe we shall get somewhere in the next two or three years. (Applause.)

Dr. Minor: While I honestly believe that too much politics is an injury to our society, some legitimate politics doubtless is necessary and inevitable in every society. It is just a question of whether we go too far.

The most important point, by far, is for the chairmen of the sections to make their programs so extremely interesting, so worth while, that men cannot fail to pay attention to them. If we get that, then we needn't worry ourselves in the least about the other matter; it will take care of itself. Some politics there will always be.

Before I sit down, may I say one thing about something that is very near to my heart?

The South lately has been doing a great deal of talking about being bled of its negro labor. We *have* been bled of negro labor and it is distinctly an inconvenience, especially to the farmer, but for years we have been bled in a much more serious way of our best young men.

There was a time when they had to go North to get opportunity. They still have to go North sometimes to get educational opportunities in certain special lines, but the opportunity for work in the South today is excellent, and we older men know it. But the young men forget it, and every year they are going in great numbers to the North, which does not need them, for the material opportunity which, if they but recognized it, lies right here at their doors.

I want to see the presidents of every university in the South (and I am so glad President Chase is here) start a campaign to show our young men what opportunities are here; to show them, moreover, that they owe a duty to their own section and their own state.

This life is not all commercial. We must, of course, look out for ourselves. But we must also remember our dear state, our dear section. We must remember that we can help to build it up in the way it must be built. Let the young men of the South be shown the opportunity that the South offers. Let them be shown the duty they owe to their section, to help it in its development. Let us make an effort to keep our young men here. Give them more and more in their educational days the full and broad opportunity they need (and President Chase is working for just that thing)—and if some of them have to go North for certain special opportunities, don't let them get swallowed up up there, and be lost to the South for ever.

Don't you all know perfectly well how many southern men who are leaders in medicine, in law, in business, in industry, and fifty other things are working in the North to-day because they thought they could not get an opportunity in the South?

We need those men, and I trust that from this year on we are going to make a systematic effort to keep them here.

This has nothing to do with the subject of my paper, but it is something that is so near to my heart I wanted to bring it up here before this body of good North Carolinians, while President Chase was here also. You men who are present are devoted to your state and to your section, but are your sons awake to the duty you owe it? I am asking you all to do your best to keep these young men here with their own people to develop their own section. (Applause.)

Dr. T. R. Taylor, Chairman: The Chair has made a great oversight in that he neglected to state (and I am sure you will all be glad to agree to this) that in case President Chase has any remarks to make in the way of discussion of any of these educational problems, or whatever else may be on his mind, we shall be more than delighted to hear from him.

Dr. H. W. Chase, President of the University of North Carolina: Mr. Chairman, what Dr. Minor has said is very much on my heart, as well as his, and I think it is on the hearts of an increasing number of men in the South. I don't know just what it has to do with the medical profession in detail, except that it has to do with every profession and every business in which the South is engaged.

I was telling Dr. Minor the other day that I had been very much impressed by the number of first rate Southern men that are serving on the faculties of the Northern institutions, to the everlasting loss of this whole territory. There are medical men and men in other professions in the Northern institutions, who really belong here in the South.

So far as I am concerned and so far as we at Chapel Hill are concerned, we are simply trying, if we can, to create the sort of institution which will not make it necessary for men in this region to go out of the region to get first rate educational opportunities. We ought to do that in medicine.

I was very much impressed the other day in Nashville in seeing that wonderful medical branch which is being built up at Vanderbilt, in the form of an immense, hollow square. This great pile of brick and mortar is to be a combined medical school and hospital. The student will be able to walk from the laboratory to the clinic and back without leaving the roof which he is under. The laboratory men and the clinical men are in absolute sympathy and contact with each other. A great medical center is growing up there in the South which it seems to me is destined to be the equal of any medical school in the country.

It just seems to me it is that sort of thing that the South needs in the medical profession and in every profession. It needs, in other words, the first rate thing. I think we ought to start a cult of quality and class and things that are first rate here in North Carolina for our young men. (Applause.)

OBSCURE FEVERS

F. M. Hanes, M. D., Winston-Salem

The few cases which I wish to discuss today are brought to your attention as curious instances of very prolonged fever without demonstrable cause. They are unsatisfactory in that they do not enrich our knowledge of etiology or the treatment of such cases. However, it is worth while reviewing even a limited experience with unexplained maladies because they focus our attention upon them and stimulate more careful observation in the future. The study of any problem must begin with a conception of the problem and I report these cases today in the hope that others have had similar experiences and that our common study may help to illustrate these puzzling instances of prolonged fever without discoverable cause.

For the sake of brevity only the positive features of the four cases will be given. The first case observed was a young married woman of twenty-five whose appendix was removed without any

complication. The wound healed promptly and the operation was entirely successful. For the ensuing ten months however, the patient has run a constantly daily temperature of from 99.6 to 100, with pulse moderately accelerated. At the same time this patient has suffered constantly with nervous symptoms and has lost weight each month. Her nervousness has taken the form of restlessness, sleeplessness, great irritability and almost complete lack of appetite. She has complained from time to time of indefinite pain in the right lower quadrant of the abdomen. Vomiting has been a constant feature, the patient frequently losing for days every meal eaten. It will easily be believed that every conceivable study has been made. Tuberculosis was early suspected and x-rays of the lungs, together with frequent physical examinations, have been made. The patient was seen by Dr. Hammon and Dr. Thayer of Baltimore who repeated the lung examination, together with x-rays and tuberculin tests, with entirely negative results. I think tuberculosis can be excluded. Focal infections of every variety have been searched for. The teeth have been studied with the aid of x-rays; the tonsils and sinuses thoroughly investigated; the urine has been studied repeatedly and several blood cultures have been made. The results have been completely negative. During all these months, many of which were spent in bed at absolute rest under the care of a trained nurse, the temperature has persistently registered near the hundred mark.

Case 2 is that of a young girl of seventeen whose history is precisely the same as that just narrated with the exception that she had no operation. She too ran for four months a persistent fever up to one hundred each afternoon, suffered from nervousness, vomited nearly all her meals and persistently lost weight. She was subjected to the most detailed investigations, with the aid of x-rays, with completely negative results. The one positive physical finding has been a very moderate enlargement of the thyroid gland. This patient too has complained of indefinite abdominal pain for which no specific reason could be assigned.

The third instance of prolonged fever without adequate cause being demonstrated, was in a married woman of 22 who had an operation for appendicitis. This was a clean case that healed perfectly without complications. Following the operation her temperature remained elevated each day from 99.6 to 100 and she became very nervous and was troubled with nausea constantly. In this case thorough examination of the blood, urine, lungs and indeed every part of her body revealed no cause for the persistent fever. She was sent to her home in Georgia and after two months became free of fever and apparently quite normal.

The fourth instance is a married woman of forty-one who, following a rather severe attack of Influenza, ran a persistent fever for five months. She too was extremely nervous, suffered daily with nausea and lost some twenty-five pounds in weight. Complete examinations from every standpoint failed to reveal any cause for the continued fever and other symptoms.

Thus briefly outlined you see four cases of fever persisting for months, together with great nervousness, nausea and vomiting without indigestion, and persistent loss of weight. The great similarity of these four cases has impressed me with the possibility that they had a similar origin in some obscure form of infection. One naturally thinks first of tuberculosis, but I believe this infection was ruled out as a possibility in these cases, both by the complete lack of positive evidence and the subsequent history. Three of these cases have recovered and the fourth has improved. In none of them was there any abnormality in the blood picture. The highest leukocyte count was 11,500. The intense nervousness, associated with nausea and vomiting, was a curious feature of all these cases. No reasonable explanation could be found for this. It is possible that the toxin of some low-grade infection was the ultimate cause of this and other symptoms. I wish to make the point strongly, however, that absolutely no positive evidence of such infection could be demonstrated.

It has been said that man lives not by bread alone but by a multitude of catch-words. There is rarely a time when there are not such catch-words in active service in medicine. The most popular one at present seems to be "focal infection." It covers much and conceals more. On its sacred altar teeth and tonsils are heaped in huge piles. When the cause of pain or fever, or indeed of any symptom, is obscure it has gotten to be fashion to sacrifice a few teeth and the available supply of tonsils. The sacrifice has been enormously out of proportion to the good achieved. We frequently hear stated with all seriousness that tonsils which had never caused their owner any pain were found filled with pus, or badly abscessed when removed. This is the most puerile form of foolishness, and is based on complete ignorance of the elementary principles of pathology. The pendulum is swinging back a little; we may expect more sanity in the future, and a less gullible view on the part of medical men when confronted with the catch-words "focal infection."

It is always unsatisfactory to report unsolved problems, but these four cases have been briefly called to your attention because they are unsolved, obscure and thoroughly unsatisfying. Such problems are daily presenting themselves in the practice of all of us. Is it not better to leave them honestly unsolved, after intelligent and industrious search for solutions than to take refuge in some even less satisfactory catch-word?

DISCUSSION

Dr. Charles L. Minor, Asheville: In the kind of work that I do, I naturally see a number of cases of persistent temperatures which cannot be explained. The doctor naturally thinks first of tuberculosis, and it is our duty to study that possibility of the case. In most cases, after a sufficient study, this can be excluded.

But what are we going to do about these very puzzling slight fevers which in my experience I have found are especially apt to occur in pale, thin young girls? There are a number of things we

think of. The doctor has spoken of focal infection. We all of us have had wonderful results at times in curing fever by removing foci of infection. We all remember cases where, upon pulling out teeth, the temperature disappeared entirely. We know of cases where, upon removal of the tonsils, the temperature disappeared. We all have seen that, but, with the doctor, I feel that too many teeth and tonsils are being sacrificed needlessly, and that only a few removals have produced good results.

Then, the gall-bladder I find difficult to investigate. I have often felt it was more guilty than I could prove. Of course, we all have surgical friends ready to investigate it, but such interference is not often wise. Drainage of the gall-bladder by the Lyon's method, with epsom salts, is valuable. I saw one case, especially, treated by Dr. Rehfuss, of Philadelphia, which yielded brilliant results, but, again, such cases are few.

A common cause of such fevers, and one that cannot be forgotten, is intestinal toxemia. I have seen cases where careful and systematic application of intestinal lavage, and things of the sort, will bring results—but, again, such cases are very few.

Hyperthyroidism is another fever facient. I need hardly refer here to the modern methods of its study, but with care we generally can settle that question.

We should not forget also chronic endocarditis, which has been so well studied by Capps, of Chicago, and a number of other excellent investigators, and which it is by no means easy to be sure about. There have been excellent reports issued recently on its intravenous treatment by antiseptic chemicals. I hope that this may help to solve this difficult problem.

Going further, gentlemen, there is unquestionably such a thing as a nervous temperature. Your high strung patient will react with temperature to hidden nervous irritations, and if the doctor chances to have that happy faculty, which few of us have, of getting inside the souls of his patients—and I am no psychoanalyst, thank God; (laughter) the psychoanalyst doesn't admit a soul exists; that is just the trouble with the psychoanalyst; if he realized there is a soul he would get somewhere—he will be surprised sometimes to find how the temperature which has puzzled him will be found to depend on worry or nervous excitement.

Then we come down to our old friend lues. "When in doubt, think of syphilis." I was sorry the doctor didn't tell us about the Wassermann test, though even this is not as positive and absolute as we hoped. We doctors are always trusting to find the absolute. Don't you remember how fine you felt when you thought you could always tell syphilis by a positive Wassermann? That isn't the case any more, and yet we need not turn it down. If we get a positive Wassermann, I find that some of these cases respond beautifully to antisyphilitic treatment.

These are but some of the things you must consider in studying obscure fevers. But, after all, gentlemen, is temperature by itself,

alone, a dangerous symptom? Don't you know perfectly well that you, and especially the patient, become unduly alarmed about finding a temperature? When you find a temperature a little above normal you say, "Something must be wrong!" Well, it is a doctor's business to investigate carefully. No man who is sensible and who cares for his own reputation is going to let a fever pass without giving it all possible study. But I am sure that Dr. McCain here, who specializes in tuberculosis, and plenty of other men, have realized in certain cases that when everything else but the temperature is all right, when the patient is otherwise in good condition, after all you can afford to put aside the thermometer and neglect the 99° or 99.4° which has worried you so long.

We ought to be able to go into the past history of these people. There are some people who run a few tenths of temperature all the time and don't know it. But if you have thoroughly and adequately studied your case and there is nothing positive but a few tenths of fever, then, gentlemen, it is your duty to disabuse that patient's mind of anxiety about herself. I say "her"; sometimes it is a man, but usually it is a woman. If you can really free the patient's mind of anxiety about herself, you have done a great deal to cure her. Tell her to forget it, but keep the case in mind. Let the patient come back once in three months or once in six months to be looked over lest something develop, but don't let them ruin their lives by worry over a small amount of fever. However, some of these cases will later develop tuberculosis. Therefore, keep your eyes open. Especially in the case of children, the mothers are naturally very anxious and are constantly taking the temperature. Adults also get scared about themselves. There is opportunity there for the strong, resourceful doctor to instill in them such confidence that they will set to work and live their every-day lives without that terrible fear. Keep them sufficiently under observation to be sure that nothing dangerous develops. If you will do that, I think you will have done your whole duty, because the causes of fever in some of these cases, gentlemen, are beyond the scope of medical diagnosis. (Applause.)

Dr. E. J. Wood, Wilmington: Mr. Chairman, I feel very grateful to Dr. Hanes for leaving this question where he did, because it reassures me and it reassures some of the others of us who are trying to be honest, and who are not able to solve these problems. The very fact that a man of his ability has to leave the problem unsolved is a tremendous comfort to me and must be to every one else. I don't know of any paper that could be more important. It shows the limitations of our knowledge and it shows also the opportunity for somebody to find something new.

Dr. Minor: Can't Dr. McCain contribute to the discussion?

Dr. P. P. McCain: I think this subject has been covered already, but in a sanatorium where you are handling tuberculosis I think it is the most troublesome thing that you can come up against.

We have a great many patients come to the sanatorium for diagnosis. We have a good many sent in who have not tuberculosis, and most of those who are sent in are diagnosed as tuberculosis on account of this temperature.

I think in a way that is a most encouraging sign because, as a rule, there is some definite cause for a temperature, and I am mighty glad that the doctors of North Carolina are realizing that as a rule the temperature which is subnormal in the morning and elevated in the afternoon is due to tuberculosis. I was glad, however, to hear Dr. Minor bring out the fact that it is frequently due to syphilis, and it is just as typical, I think, of syphilis as it is of tuberculosis. But the case that just nearly runs a man crazy is the woman (or man, and when it is a man it is even worse) who just continually runs this nagging temperature.

We have had very few of the cases with persistent nausea and vomiting that Dr. Hanes mentioned, but we do have any number of cases that we can't say are tuberculous, that are running around 100 temperature. We don't want to give them the tuberculin test because it is mighty hard to interpret the tuberculin test properly in such cases as that. We x-ray the teeth and the tonsils, and we make Wassermann examinations; we make studies of the gall-bladder; we try to rule out pyelitis and everything else that we can think of, and yet they keep on running this temperature. They want to know what it is and we just have to tell them: "The angel that gave it to you probably doesn't know himself what it is." (Laughter.)

We try to handle them as Dr. Minor said. We put the thermometer up on the shelf, and, if we can rule out what we think is tuberculosis, instead of keeping them at complete rest in bed as we do the average case, we put them on an hour's exercise to start with—and most of our tuberculosis patients don't get on an hour's exercise before they leave the sanatorium, after months and months and months. In most of these cases we have been able to ease their minds by proving to them that this temperature is nothing serious if they can take a considerable amount of exercise without its causing any other alarming symptoms.

Two or three of these cases have been the most troublesome to us. They were girls. We advised them to take up training in our nurses' training school, and all but one of these cases that did so have gotten along remarkably well. One case still ran a fever in spite of everything. We sent her up to Dr. Stengel, of the University of Pennsylvania, and Dr. Stengel, as I understand, couldn't find out what was the trouble. That was two years ago. She is still running a fever. Nobody has found out what it is. (Applause.)

Dr. Hanes, closing the discussion: Mr. Chairman, I have little to add. I merely brought this up because I felt that all of us were meeting these cases and that an honest confession might hearten us to search further.

Dr. Minor is certainly correct when he says that temperature itself is not a disease and should not be treated as such, and in these cases we have realized that. It was the associated phenomena of great nervousness, loss of weight, and vomiting that brought these patients in as sick people, their symptoms perhaps accentuated by an impending dread of something that was going to happen.

There may be a fever due to nervousness. I have often been tempted to believe that the excitable, highly strung, overmetabolizing type of person may be producing a fever, just as we see patients on hot days in summer showing a temperature of 99 or 99.2.

SOME HEALTH PROBLEMS IN A WOMAN'S COLLEGE

Anna M. Gove, M. D., Director, Department of Health
North Carolina College for Women, Greensboro

It is entirely natural that a college should have problems: we have had our share. Some have been solved; others still hold our attention.

Ten years ago we were meeting with active opposition to the medical examinations required for every new student. Now parents and students are eager for it and interested to know results.

We undertook these examinations primarily to detect any active tuberculous lesions and to line up students for corrective and remedial work in gymnasium.

At first no records were kept. Defects were simply jotted down; the case acted on, and considered closed. Later we adopted record blanks and extended the routine examination until we now have on file a comprehensive record of the physical condition of every student at the time she enters college.

As soon as each examination is completed, the physician making it takes time for a conference with the student, going over the record in detail with her, explaining her particular needs in the way of health habits, encouraging her to ask questions, putting her in line for dental attention, refraction, etc., and trying to make her feel that we all are interested to help her in any way we can.

In 1923 and 1924, we made 998 medical examinations. Of these 762 were freshmen; 136 seniors.

Measurements, tests and shadowgraphs are made in the physical education division and the student is assigned by medical officer to the group of activities in which she is entitled to take part.

We feel that every student who is able to undertake college work at all should have the advantage of some kind of supervised physical activity and very few students are excused permanently, since our plan adapts the work to individual needs. If she is sound, she may take regular class work in gymnasium and sign up for any sport and play on matched teams. Should she be less robust, modified work is prescribed. She gets setting up exercises, largely of a corrective type. Unless expressly forbidden, tennis and hiking are permitted, but no major sports, like hockey, basketball or soccer, are allowed

and no contests of any kind. Still other students are given individual programs, outlined according to their special needs, for corrective or remedial work. This is followed by the student under supervision of an instructor in charge of a group of six or seven students who have similar programs. No sports are permitted for this group.

A follow-up file is made from the medical records and to these we refer constantly during the student's residence at college. In the senior year a final examination is given and checked up on the original examination blank, improvements, retrogressions, intercurrent illness, etc., being noted and final recommendations made. These follow-ups consume a great deal of time but the effort is worth while. Naturally, they deal mostly with dispensary cases and those needing, beside class-instruction in hygiene, a physician's advice in the adoption of health habits.

Sinus and ear infection, eye defects, dysmenorrhea, and secondary lesions from tonsils, abscessed teeth, and pyorrhea, in times past have given us some very serious problems, but an increasingly intelligent public makes it possible in the majority of cases to get prompt coöperation for correction. Whereas we formerly consumed weeks in correspondence about as simple a matter as permission to go to a dentist for a filling, we now have practically no delay in much more serious cases, provided the student herself is convinced that it is best for her to have attention. One source of delay is the personal dislike for wearing glasses. Even where there are bad defects of vision, this holds true. We now record the date when a student is advised to have an eye examination and the oculists send a case report of students who consult them. With these reports we are able to get a good check-up on our recommendations and a fair percentage of corrections made.

Our protection against smallpox is practically 100 per cent of vaccinations or re-vaccinations within five years. This includes students, faculty, officers, and employees, and has changed from a problem to a mere time-consuming process.

There is some trouble in enforcing the rule that all food-handlers and dish-washers must present certificates showing their freedom from infectious disease before they can be employed. We have a large turn-over, especially among the dish-washers, and a sudden walkout complicates matters temporarily.

Sports and hiking have been an opening wedge to many a girl's readjustment and happiness. By seeing to it that our young women are physically active, we escape most of the inordinately intimate friendships which loom as a potential problem in every college. Feminine indifference to voluntary daily exercises keeps us busy seeing that they take it. We have up to the senior year two required periods per week of regular instruction in physical education and, in addition, four hours per week of out-of-door exercise required. These hours seem to be difficult to fill acceptably. So long as we had a site where week-end camping privileges could be offered as a reward for completing one hundred miles of supervised hiking, we did very well and there was much enthusiasm over this form of

exercise, but this year, with no camp available, even hiking under student-leaders has lost prestige.

The tennis courts are always in demand. We share with the training school a small athletic field where hockey, basketball, and soccer are played. A large athletic field is under construction and will be available for organized games. The new physical education building with its 75-foot swimming pool is nearly equipped, and the out-of-door gymnasium has served a very useful purpose and except in the coldest weather has been most satisfactory.

We have to deal annually with at least six groups of unnecessarily inefficient freshmen.

1. The first group presents a serious problem in mental hygiene and is made up of students just out of high school who have been allowed to form slipshod mental habits. They are either desperately unhappy over their inability to meet freshmen requirements or they throw study to the winds and get into mischief. Most of them become absolutely out of humor with any attempt to do college work and either go home or have to be sent home, which is a pity, for some of them have real ability and they lose out of life a certain training to which one feels they are entitled.

2. The girls who enter college already boasting a complete nervous breakdown: Note the sidelights on one of these cases—eighteen dances and receptions the last six weeks of high school year. While we all approve of social activities, this as a culmination to a winter of gaiety seems unreasonable, and the girl's parents should have known it would overtax a student who was supposed to be carrying a full senior course of work. The young woman herself said it had been a wonderful year and she would rather have died than miss it. So much for the poor judgment of parents and the misdirected enthusiasm of youth. She was not even able to go through the first semester of lightened college work. Finally she gave up all idea of study and I suppose went on with the dance.

3. The deliberately undernourished girls who deny themselves sufficient food lest they should lose "that boyish form." This, of course, is a passing fad.

4. The army of nibblers who are hard to convince that wholesome, well-balanced diet served at regular intervals is what they need instead of sweets at just any time.

5. The girls with chronic constipation and the pill-habit. They will swallow anything any layman offers them, provided only that it is recommended as strong. Regular habits are "such a bore" and they "simply can't remember." Physical and mental inertia are their portion.

6. The dysmenorrheics who might have been well if their mothers had known how to care for and train them, or who even yet might almost surely be well if they would have the patience to persevere for a year in the daily exercises recommended for developing abdominal muscles and improving pelvic circulation.

Kenyon states that ninety to ninety-five per cent of dysmenorrheas are capable of entire relief by this method. The other five or

ten per cent need pelvic examination and treatment or operation if they fail to show marked improvement within a year of this training.

It is difficult to persuade students in whom wrong habits have become more or less fixed and who are only periodically inconvenienced to persist in any daily hygienic routine which requires effort and self-control. One of this year's freshmen said very frankly: "I have done the other way too long to want to bother, but I am glad to know because I certainly shall not allow my children to do a lot of the foolish things I have done."

Most of these health problems will cease to exist when students are reared in homes where life is conducted upon a reasonably strict hygienic basis with simple habits a part of the daily routine.

The task of improving living conditions in the homes of the state, of organizing for the sound mental, moral, and physical training of children in their own homes cannot be left to any one agency; it calls for the earnest coöperation of all of us.

Our present plan for helping solve this problem is to give for one year two hours per week instruction in the basic principles of hygiene. This is required of all students registering for the academic work except those in home economics, who are provided for later in their course, and those in the commercial department, to whom a special two-hour per week one-semester course is given. So many of the commercial students accept positions in the middle of the year that we can best serve them by this short course.

We argue that if from 725 to 750 new students coming from all over North Carolina are drilled in essential principles of hygiene, when they return to their own communities they are bound to make some improvement in general home condition—if not immediately in their parents' homes, certainly later in their own. This, however, is only our first step and we cannot look for spectacular results—possibly not even for immediately appreciable changes—prejudice and custom are hard to eradicate; but looking back to the time of the founding of our college and comparing with present conditions, there has been great progress. We must give the major credit to the work of the State Board of Health, but the rest of us have caught the spirit and we are conscious of having fallen in line and having worked for the same end as far as we have been able to incorporate the work into the college curriculum.

We hope to go further and offer as a second step a teacher-training course in school and community hygiene, so that the teachers themselves may be prepared to take an intelligently active interest in these fields and help start the school children right.

There is always the problem of academic requirements. Our curriculum calls for fifteen recitation hours per week, except in music and home economics, where sixteen hours are permitted in freshman music and senior home economics; two hours are required for preparation of each recitation, making forty-five hours per week as the total regular requirement, except in the above cases where it is forty-eight hours. If a student is doing extra good work, by

special petition to the faculty and with the approval of the medical office, she may be allowed to carry eighteen recitation hours on condition that she report regularly to the physician. If she fails to hold up to the required physical standing, she must drop the extra work upon the doctor's recommendation.

The extra-curricular activities are always hard to manage. Not only in private life but in the college community extra work just seems to gravitate around some people so that we have to look out that a student who is a good executive does not carry an overload of class, business and social obligations. An academic standing of 3 average with no condition or failure is required for holding any position carrying points. No students may hold more than ten points of continuous extra-curricular work. All this is arranged under a somewhat complicated point system in charge of the faculty-student committee; yet, in spite of all our care, the excess of non-academic activities continues to be a health problem.

Mental efficiency tests were given to an average group of 355 freshmen and we undertook going over the medical records of the lowest hundred in this group with the purpose of hurrying up for them the correction of remediable defects.

30 showed very poor health habits.
22 were referred to oculists for refraction.
5 referred to specialists for marked deafness—only one improved under treatment.
1 ethmoid sinus infection.
7 nasal obstruction.
41 enlarged adenoids and tonsils.
(2 advised immediate operation—20 advised early operation).
12 pyorrhoeas.
3 referred immediately to dentists.
15 cases with very badly decayed teeth.
6 received immediate attention.
16 valvular heart lesions.
Compensation fair, except in two.
History of influenza and focal infection in nearly all these cases.
31 poor chest development.
5 post-influenza bronchitis.
2 possibly tuberculous, but neither repeated physical examinations nor examination of sputum were able to demonstrate any active lesion.
13 anemias.
16 enlarged thyroid.
8 increased blood pressure.
5 low blood pressure.
8 underweight—10 lbs. or more.
19 overweight +10 lbs. or more.
2 excessively fat.
1 ichthyosis, mild.

1 chronic malaria.
1 asthma.
2 obstipation.
2 chronic appendicitis.
11 dysmenorrhea—4 severe grade.
1 extremely nervous—improved much under regular college regime.
1 showing no marked physical defect, mental test nearly standard, but reported as non-studious.

In some cases corrections made it apparent that the physical defects had a certain bearing on their ability to work. We had one brilliant result—a student who rated much below the average in mental efficiency. Her class records had been one failure, one condition, two passes, one good—all this on repeated work. She was much underweight, anemic, lacking in self-control, concentration was difficult, teeth were in poor condition, pyorrhoea present, adenoids and tonsils hypertrophied and badly diseased, mouth breathing constant, heart showing valvular lesion, compensation only fair. An adenoid and tonsil operation was done the latter part of December. There was a rapid change for the better; facial expression improved self-control good; was alert and delighted at being able to "use her brain." Her spring grades improved. She made four "goods," one "pass," and one "condition."

The posture of these same 355 freshmen was registered on entering college as:

18 Good
110 Fair
184 Poor
43 Very Poor

By spring, 65 per cent, or 230, showed marked improvement.

When entering 291 of these students showed defective feet, and 330 were wearing shoes not approved. At the close of the spring term 181 were wearing approved shoes and there was 25 per cent improvement in defective feet.

Of the 355 there were:

133 more than 10 lbs. underweight.
90 lbs. average weight.
129 gaining in weight.
8-1/0 lbs. average gain in weight.
21 lbs. greatest gain in weight.
4 no change in weight.

These underweight students were checked up and weighed by the infirmary nurse daily. They were given a pint of good milk in the morning and another pint in the afternoon, in addition to a regular diet.

Medical service at the college is one of the daily problems. The total number of students registered in 1923-24 was 1,428. Our records show:

6764 dispensary calls.

27.8 average daily dispensary calls.
51 largest number dispensary calls in one day.
320 smallpox vaccinations.
243 days infirmary was open.
841 total number of infirmary admissions.
12 average number of students per day in the infirmary, including quarantined and convalescent.
24 largest number of patients in infirmary any one day.
3½ average number of days each patient in infirmary.
Results of treatment—patients recovered or convalescent—all.

DISCUSSION

Dr. J. W. MacConnell, Davidson: I was interested in Dr. Gove's paper because Dr. Gove and I happen to be on a committee to formulate plans for looking after the health of college students. I have been for about eighteen years the physician for Davidson College, in addition to my work there on the faculty.

I am satisfied that since the World War we have received a great impetus toward physical education, and students coming to college now expect a complete physical examination, and they are glad to have that complete physical examination given them.

I am also certain that the physical condition of the youth of this country, as a whole, is very much better than it was twenty or twenty-five years ago. That is due to compulsory education and to the general health knowledge that has been disseminated throughout the country. In other words, a student who comes to college now has been accustomed to physical examinations and has had his teeth, tonsils, and so forth looked over before coming to college.

There are probably more students from outside of the state of North Carolina at Davidson College than at any other institution in this state. I believe I am correct in making that statement, although you may doubt it, because these larger institutions (like the North Carolina College for Women, the University of North Carolina, and the North Carolina State College) are made up almost entirely of students from this state. At Davidson College we draw from Texas, Arkansas, and Mississippi, as well as North Carolina.

I am satisfied that the work of the State Board of Health in North Carolina can be compared favorably with the work in any of these other states. In other words, the North Carolina boy who comes to college now has had proper training in regard to health.

The problems in a girls' school are not in a great way different from those in a boys' school. I notice that in general personal hygiene there is an improvement. There is very much less venereal disease than was prevalent fifteen or twenty years ago. It may be due to prophylaxis, but I am inclined to think it is due to higher moral standards that have been inculcated in the American youth, his desire to keep himself clean.

The students at Davidson College, of course, are examined very much as these young ladies are at North Carolina College for Women and the results are carefully tabulated.

One word to the physicians assembled: The college physician at any institution is always glad to have the student's personal physician write to him and advise with him concerning the student. Remember that the college physician is there in an advisory capacity; he is not trying to take work from you or trying to work on your patient, but he is trying to keep that patient under proper health supervision while he is in college. So don't hesitate to write to the college physician of any of these colleges concerning your patient who goes to that college.

I am also sure that the high school athletics which are at present indulged in are too strenuous for adolescents. Boys and girls, fifteen and sixteen years of age, should not enter these competitive sports, traveling from one town to another, and engaging in basketball and baseball games, because they are too young to stand the strain. I hope to see the home physicians checking up closely on these high school boys and girls, because a great many of them have suffered severe heart damage from these sports. (Applause.)

Dr. Charles L. Minor, Asheville: I have had the opportunity in the thirty years I have practiced in Asheville to see how the conditions are improving in our girls' colleges. Thirty years ago the conditions were bad.

I remember some twenty-five years ago a beautiful young Virginia girl who was a student at a celebrated American college, a girl who would have been of invaluable service to her community and country if she could have lived. She had a small hemorrhage and within one week after that the doctor of that college let her take part in a track meet. She had an acute dissemination, and she died. Gentlemen, that couldn't happen today. The profession knows too much. The authorities of the colleges know too much, and I hope that sacrifices like that are not going to been seen any more.

Take a young girl from a foolishly managed home, from a foolishly conducted life, and put her in a college, and the school doctor has a big task to re-educate her. There must be a new arrangement of her whole life. Naturally, some of those girls go under from mental or physical overwork, though when we have women like Dr. Gove watching these girls carefully and thoroughly, the percentage of those who go under will become less year by year.

Incidentally, the prognosis in tuberculosis in these young girls between sixteen and twenty is extremely grave. I don't know why it is. I am sure Dr. McCain will back me up in this statement: that the young girl, much more than the boy, at that age tends to acute tuberculosis or to a rapidly developing chronic tuberculosis, and I take charge of them always with severe misgivings. Moreover, the young girl is apt to be terribly light-minded, and the psychological control of them is an excessively difficult problem that makes the prognosis worse.

Again, a girl's eating habits are unwise. A few years ago I wrote to the president of a large Southern girls' college (and a splendid one) complaining about one of his girls of whom I had charge, when I found out that at college the girl ate no breakfast whatever. I said he ought to have been ashamed of himself to let any girl in his college start her day's work without eating any breakfast. He wrote back and said, "Doctor, if you expect me to make girls eat breakfast, it is more than I can do. I can't make girls eat breakfast"—and I know it is true. Why women won't eat breakfast is a puzzle to me, but how they can expect to be healthy eating at odd times and eating the queer messes and all sorts of truck that they do, I don't know.

To the credit of the boarding-schools and colleges I will say this: that, taking women's histories, I find their best weight is in their boarding-school and college days. Why? Because at that time they are to some degree under control and forced to eat regularly. When they get out, they live irregularly, they eat at any old time, and of course they suffer.

Then, the fashions! I am old enough, I hope, to be getting more sensible, so that I recognize that the things that once seemed horrible to me are not quite so horrible. The fact that young men can go through winter weather with B. V. D.'s, and girls with less than that, probably shows that the danger of too light clothing isn't as great as I had thought it was. But, anyway, their dress today is unhygienic and it is unwise—I am not talking about propriety now; it is unwise hygienically. Yet there is no legislature, and has been none since the old days of Greece, when they tried sumptuary legislation, that does not know perfectly well that you can't legislate to make women do what they don't want to do. So you might as well give up the attempt.

I agree heartily with the doctor that athletics are being overdone. I see the results of it.

Overstudy is a serious problem with a few girls. The ambitious, over-studious girl is a very serious problem, but there are relatively few such, and most don't study enough. I am not often forced to face cases of overstudy, but I do find many cases of over-indulgence in athletics, over-enthusiasm for society, and things of that sort.

Then, of course, you come right back to the basis of all this question. It is the unwise home. You can do a great deal, Dr. Gove, to make up for a foolish mother and father, but you can't do it all. The basis of all the trouble is the home, and here is where family doctors can do something. We doctors come in contact with the home, and it is our duty, which we don't fulfill, to see that the physical and mental hygiene of the homes of the families we treat, is better than it is. Don't be afraid to "butt in." If you see a mother doing foolish things with the training of her girl, or a father with his boy, tell them so.

I am a great believer in the idea that it is the duty of the family doctor to every year go over and examine all the children of that family. He will often find a deformed chest, or something else, that

later might encourage tuberculous trouble or other sickness and which he can cure by wise gymnastics or proper hygiene.

Recently I had occasion to see the chest of a little boy six years old, the son of a dear friend of mine. He had a very badly built chest. I told his father that if let alone it might develop into the groundwork of tuberculosis. That was about four months ago. I put the child on systematic gymnastics, and his chest is already coming on beautifully. If we had waited until he became twenty-six years of age, we should not have been able to do anything. Even if we had waited until he was sixteen, we should not have been able to do very much. You must take those chests when the bones are soft and yielding. That is the time that you can do a great deal with them. In college, even, you can do a great deal, but if you put it off too late, it is a hopeless proposition.

Dr. P. P. McCain, Sanatorium: I just want to bear testimony to the splendid work which Dr. Gove has been doing at the North Carolina College for Women. She has taken a personal interest in the girls there. She started in there when the college was small. She is still with it when the college is large, and I have abundant reason to know that she has still as much interest in each individual girl in that school as she had when there were only two or three hundred girls there.

I have had opportunity to know this in various ways. The way in which this knowledge has been forced upon me more than any other is her interest in finding out whether or not any of the girls have tuberculosis. We have not had a far advanced case of tuberculosis come to the sanatorium from the North Carolina College for Women. (Applause.)

Dr. Gove, closing the discussion: I certainly appreciate the very understanding discussion that has been given my attempt.

There is a great deal that can be done by the home physicians, and it is to them that I would make the appeal to get children in good condition while they are young, so that we shall not have unnecessary defects to correct later.

I was interested to hear somebody say that there is an increased number of heart lesions coming from basketball or other athletic exercise. We have found that our number of heart lesions has increased decidedly within the last few years. Whether that is due entirely to overstraining in athletics, I do not know. It may partly be due to that; in some cases I know it has been due to that, particularly where girls have been allowed to play basketball under men's rules and with men coaches.

On the other hand, I feel that some of the heart lesions may be due to influenza infection, and a good many may be due to diseased tonsils.

We do not allow our girls to enter any extramural athletic contests. There has been a very great effort to get us to participate in intercollegiate contests, but we absolutely refuse to do it. We

have interclass and intersociety contests which are sufficiently exciting to keep up a real, active interest in sports.

ECZEMATOID RINGWORM OF THE HANDS AND FEET

Joseph A. Elliott, M. D., Charlotte

Eczematoid ringworm of the hands and feet is one of the most common skin diseases met with today, and yet it is not generally recognized. This unfamiliarity with such a prevalent condition is not unexpected, as very little was known of the condition by American dermatoligists until Ormsby and Mitchell presented their excellent paper on the subject before the American Medical Association in 1916. They reported 65 cases, with photographs of their clinical cases and cultural findings. This work aroused a great deal of interest among dermatologists.

Prior to that time a number of cases had been reported in Europe by Fox, Pellizari, Djelaleddin-Moukhtar, Whitfield, Sabouraud, and Kauffman-Wolff. These observers were able to demonstrate mycelial threads in cases that had been diagnosed eczema or dyshidrosis. Whitfield described five cases of ringworm of the hands and feet that in his opinion were indistiguishable from the ordinary outbreak of vesicobullous eczema.

Since the work of Ormsby and Mitchell appeared, a number of Americans have done some excellent cultural work in these cases and have reported large numbers of clinical cases. Notable among these are White, Williams, Hodges, Mitchell, and Weidmann.

Whitfield has divided the clinical manifestations of ringworm of the hands and feet into three groups. (1) Acute vesicular: Onset sudden with the characteristics of acute eczema or dyshidrosis. (2) Chronic intertriginous of the toes; secondary to the acute vesicular type, characterized by whitened, sodden mass of epithelium between toes. (3) Chronic hyperkeratotic: Enormous overgrowth of the horny layer.

Kauffman-Wolff has a similar classification. She divides her cases into (1) vesicular, (2) squamous, and (3) pyodermic.

The initial lesion in all of these cases is a vesicle. The vesicle may occur singly or in groups. It is deep seated in the epidermis and has been accurately described as having the appearance of a sago-grain embedded in the skin. The vesicle usually arises from a clear skin without the appearance of a surrounding erythema until secondary infection takes place, which also changes the content of the vesicle from a clear to a cloudy fluid. This fluid is strongly alkaline and of a mucilaginous consistency. The latter characteristic is of some diagnostic importance, as most other vesicular lesions are more watery. The content of the vesicle may be absorbed leaving a brown macule. Within a few days the top of the macule pulls off leaving a shiny surface with a collarette of scales around the border. Where the vesicles are numerous they frequently become confluent, forming large bullae. These occasionally become secondarily infected forming a pyodermia. These lesions may be so ex-

Pyordermia.

Vesicular eczematoid Ringworm of hand

Acute Vesicular. Note large vesicle under second toe.

Chronic intertriginous

Dried vesicles forming brown maeules on sole. Squamous lesions on dorsum of foot.

tensive on the feet that the patient is incapacitated, being unable to bear the weight on the feet. Lymphangitis is not an uncommon complication of the pyodermia cases.

The hyperkeratotic lesions are very rare in our experience, the pyodermias less rare, while the acute vesicular and chronic intertriginous are very common. About a year ago we made a study of 250 cases. We found the feet alone involved in 106 males, or 42.4 per cent; and 33 females, or 13.2 per cent. The hands alone were involved in 26 males, or 10.4 per cent; and 54 females, or 21.6 per cent. Both hands and feet were involved in 16 males, or 6.4 per cent; and 15 males, or 6 per cent. Secondary lesions occurred in 8 males, or 3.2 per cent; and 11 females, or 4.4 per cent. The nails were involved in 15 cases, or 6 per cent. Of the total number of cases, 148 were males, or 59.2 per cent; and 102 females, or 40.8 per cent. Since this study was made we have added 150 cases to our list, making 400 new cases seen during the past 6 years, besides a large number of recurrences or reinfections.

While the clinical appearance of eczematoid ringworm is sufficient for a diagnosis in some cases, it is often necessary to find the mycelia in order to make a positive diagnosis. This may be attempted in two ways: (1) by direct examination of material from the eruption; (2) by cultural methods. At times it is necessary to resort to both methods. Material is obtained by clipping off the tops of the vesicles in acute cases, and obtaining scales from the borders of the chronic cases. A portion of the material is placed on a glass slide to which is added a few drops of a 15 per cent sodium hydroxide. This is heated until the scales are thoroughly macerated. A cover slip is placed over the specimen and pressed down firmly. The specimen is then ready for a thorough microscopic study. If moulds are present the mycelia can usually be found. The other portion of the material is soaked in 95 per cent alcohol for thirty minutes, in order to destroy the bacteria normally present, and is then planted on Sabouraud's proof medium. As soon as a growth appears it is transferred to other media, in order to get a pure culture. The culture is then ready for careful microscopic study. Hodges, in his extensive cultural work of these cases, demonstrated three distinct moulds. He classified these as trichophyton A, B, and C. The colony of trichophyton A is white at first, but later becomes pink. There are present pyriform conidia and pluriseptate fuseaux. Trichophyton B shows a white, downy growth at first, but later becomes yellowish. Pyriform conidia were observed, but there were no fuseaux. Trichophton C is white at first, later becoming cream-colored. This organism has conidia and fuseaux, but also has numerous spirals characteristic of gypseum group.

In our cultures we were able to demonstrate a number of moulds that corresponded to Hodges A and B groups, but did not find any of the C group. One must be careful not to overlook the contaminating moulds. These are quite common and frequently appear in the cultures.

DISCUSSION

Dr. F. R. Taylor, Chairman: I feel it has been well worth while to come all the way to Pinehurst to hear this paper. I want to pay a little personal tribute to Dr. Elliott's work along this line. I had occasion some time ago to see the worst case of eczematoid ringworm of the feet that I have ever seen or that I ever hope to see, in an old lady in about her eightieth year. The soles of her feet were practically entirely undermined, so that it was impossible for her to put any weight on her feet. She was confined to her bed because of the pain that putting even part of her weight on her feet caused her. She had been under treatment by a number of physicians, including myself.

None of us had been able to do anything worth while for her. I was very fortunate indeed in being able to get Dr. Elliott to see her; his suggestions were carried out and she had practically recovered entirely. In hot weather she has an occasional slight return, but the treatment easily controls that.

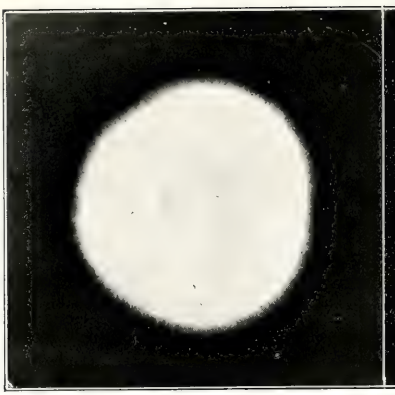
I believe these eczematoid ringworms are extremely common and increasing rapidly in number.

I stumbled on something once by accident that I owe to Dr. Hiatt, of High Point, that was of some interest in a few cases. I had referred a patient with eczematoid ringworm, rather deep, to Dr. Hiatt for x-ray treatment. One day the current was not working properly, and he thought he would just take a shot at putting some powdered gentian violet on this finger to see what would happen. What happened was that the finger, which had been giving trouble for months, very promptly got well. For some time after that I used gentian violet, and still use it, and it seems to have some definite effect. I don't know that in a larger series of cases it would be anywhere near as good as Dr. Elliott's standard treatment.

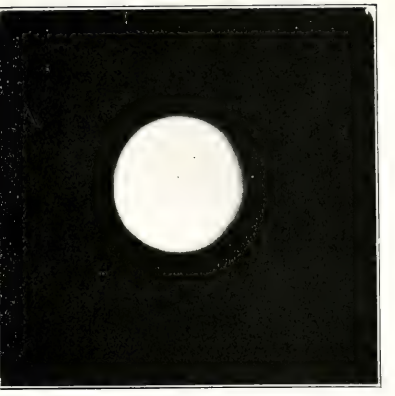
Another thing that I believe pays in these cases is to take plenty of time with them, to dissect away bit by bit the old, dead epidermis and dermis; sometimes you may get practically a cast of the sole of the foot, or between the toes. It pays to get rid of that, and to soften it up by prolonged soaking and that kind of thing before you apply whatever you are going to use. Patience and time will do a great deal in these cases.

I wrote to Dr. Elliott about the gentian violet and I should like to know whether in his experience, which is vastly more extensive than mine, he has had opportunity to observe that treatment, and what the results have been.

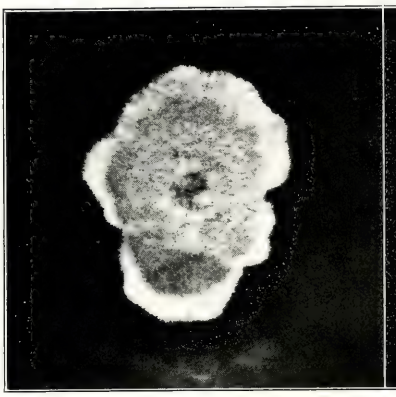
Dr. Elliott, closing the discussion: At Dr. Taylor's suggestion I used gentian violet, and in the few cases that I tried it, it seemed to work nicely. I have not tried it in a sufficiently large number of cases, however, to draw any definite conclusions as to its therapeutic value. It has been my experience that when we use any form of therapy we are sometimes carried away with the primary results, but later change our opinion. I do not mean to infer that gentian



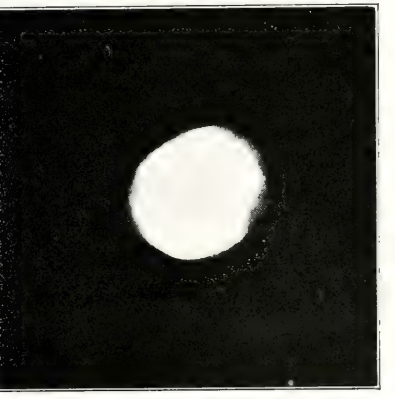
Culture on Sabouraud's proof medium. White at first, later pink.



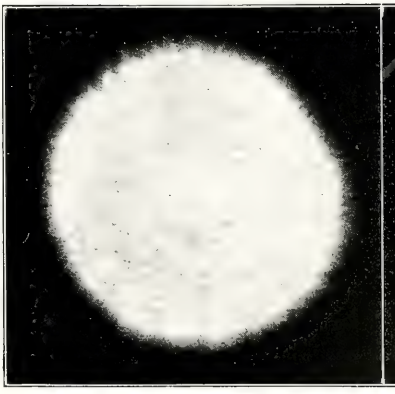
Culture on Sabouraud's proof medium. Pure white.



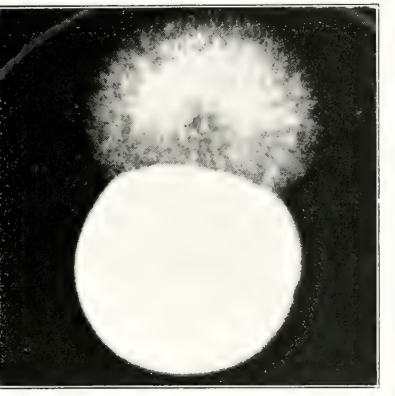
Culture on Sabouraud's proof medium. White at first, later pink.



Culture on Sabouraud's proof medium. Pure white.



Culture on Sabouraud's proof medium. White at first, later pink.



Culture on Sabouraud's proof medium. Pure white mould pathogenic. Fluffy mould a contamination.

violet is not a good therapeutic agent in the treatment of eczematoid ringworm, but I think it wise to go a little slow in drawing conclusions.

At present I am using a substance prepared by Dr. Arbuckle of Davidson College, in conjunction with my other forms of therapy. This substance is a distillate of paper or wood and is called pyrolene. I have found it to be an efficient remedy in a number of cases. My patients frequently tell me that it is more effective than any other preparation that I use. I have not used it on enough cases, however, to determine its real value.

Whitfield's ointment has been used extensively by Whitfield of England and by practically every American dermatologist. As a whole, I think it is the most efficient local application that we have. In some cases it works admirably, while in others it is failure. We find, after all, that we must treat each case individually, and that no definite plan of treatment can be carried out successfully in all cases.

PULMONARY SYPHILIS

P. P. McCain, M. D.
Superintendent State Sanatorium for Tuberculosis
Sanatorium

Although pulmonary syphilis is a rather rare condition, its consideration is of practical interest because of the similarity of its symptoms to those of tuberculosis and because of the marked improvement following antisyphilitic treatment. It seems strange that the condition should be rare since syphilitic infection is so common and since the lungs act as a filter for the blood, which in syphilis is infected with spirochetae.

At the North Carolina Sanatorium we have found among 3,901 patients only one case of proven pulmonary syphilis. We also made this diagnosis, which we feel reasonably certain is correct, in one outside case whom we only saw for examination.

For the past six years we have been getting stereoscopic x-ray pictures and a Wassermann test on every patient admitted, the latter being done for us by the State Laboratory of Hygiene. For the five years of our service previous to this time, without these aids, some cases of pulmonary syphilis may easily have escaped our notice. Since the test has been routine, we have found a positive Wassarmann in 29, or 1.5 per cent, of our 1,855 white patients, and in 23, or 16 per cent, of our 153 negro patients. The small percentage of positive Wassermanns in our white patients, who comprise the great majority of our cases, may account for our not having found more cases of pulmonary syphilis. Several patients among both races have been diagnosed as possible or probable pulmonary syphilis, but only the one case above mentioned was proven to our satisfaction.

Osler (1) reports 12 cases of pulmonary syphilis among 2,500 autopsies at the Johns Hopkins Hospital. He also quotes Fowler as being able to find only 12 cases of pulmonary syphilis after a search

of all the medical museums of London, 2 of which were of doubtful nature. (2) Friedlander and Ericson, at the Cincinnati Tuberculosis Sanatorium, report 4 cases, or 0.5 per cent of pulmonary syphilis—all white—among 791 patients. Of this number there were 609 white patients, 11 per cent of whom showed a positive Wassermann; and 182 colored, of whom 26 per cent gave a positive Wassermann. (3) Funk reports 4 cases of pulmonary syphilis among 1,200 patients treated at the Jefferson Chest Hospital.

Aside from the white pneumonia of congenital syphilis and the temporary bronchitis or "apical catarrh" during the secondary stage, pulmonary syphilis manifests itself during the late stages of the disease—usually some years after the primary infection. The pathological forms usually found in the lungs are the gumma, fibroid induration, and broncho-pneumonia.

The gumma may be single or multiple, and varies in size from an acorn to a hen's egg or larger. Its caseous center may undergo liquefaction necrosis and cavitate, or the whole gumma may be converted into a fibrous mass which will pucker or contract and which may produce bronchial stenosis or bronchiectasis. On the other hand, if proper treatment is instituted soon after its formation, the gumma may heal with little or no evidence of the lesion remaining.

The most common form, fibroid induration, begins as a cellular infiltration and an overgrowth of connective tissue, usually around the hilum, and extends outward along the bronchioles and blood-vessels, or occasionally it begins at the pleura and extends inward along the interlobar septa. Eventually the whole area involved is converted into dense fibrous tissue, which frequently cannot be differentiated even at autopsy from the fibrosis of tuberculosis.

Bronchopneumonic syphilitic lesions are less frequently found, and doubt has been expressed that syphilis ever manifests itself in this way, but (4) Landis states that spirochetae have been found in a number of such lesions.

All forms of the lesions are much more likely to be located in the lower portion of the chest and usually around the lower horn of the hilum. They usually extend from the hilum along the lower horn into the base of the lung. They may be found elsewhere than in the lower lobes, and they are rarely found at the apex.

The symptoms of pulmonary syphilis are almost identical with those of tuberculosis. A cough is usually present and is frequently productive, the sputum being purulent or mucopurolent and blood streaked perhaps in even a larger percentage of cases than in tuberculosis. Hemorrhages not infrequently occur. Pleurisy, either dry or with effusion, is occasionally seen. Fever of mild or moderate degree is almost always present, and there is no condition in which the temperature is so much like that of tuberculosis as tertiary syphilis. It is almost always normal or subnormal in the morning and elevated in the afternoon or evening. Dyspnea on exertion and loss of weight and strength are usually present.

There is nothing characteristic about the physical signs in pulmonary syphilis. Because the lesions are usually centrally located,

physical signs are frequently very slight. The percussion note over the lesion is impaired to a varying extent; the excursion of the diaphragm is lessened on the affected side; the breath sounds over the area are often somewhat faint; rales are relatively few, even after cough, unless there is an associated bronchiectasis.

The x-ray is of much greater value in diagnosing this condition than the physical examination; though neither is there anything entirely characteristic in the radiographic findings. In general, we may state that the densities in pulmonary syphilis are heavy and homogeneous. The densities cast by the gummatous and fibroid lesions usually have well defined but irregular margins, due to the projection of finger-like fibrous bands from the margin of the lesion. In the pneumonic type the densities are fairly well defined and the margins are more regular in outline. When there is a bronchial stenosis and bronchiectasis, with a resulting secondary pneumonitis, or when the pleura is involved, or when there is a co-existing tuberculosis, the densities become very complicated and their interpretation more difficult. Not only the character of the densities but also their location, which is usually around the hilum or in the base of the lung, is of considerable diagnostic significance to the roentgenologist.

Since the improvement in the technique and interpretation of stereoscopic x-ray films, and since the development of the Wassermann test, accuracy in the diagnosis of pulmonary syphilis has been possible to a much greater degree than formerly. Every patient admitted to a sanatorium should have the advantage of these two diagnostic procedures.

Tuberculosis is the disease for which pulmonary syphilis is most frequently mistaken. The following points should be considered in making a differential diagnosis:

1. The history of infection. This is only of value when positive, since many syphilitics will deny a known infection and others are ignorant of or may have forgotten about mild primary and secondary lesions.

2. The presence of tuberculous or syphilitic lesions elsewhere in the body—the bones, the testicles, the larynx, the aorta, etc.; or the characteristic stigmata of syphilis, such as the saddle-shaped nose and Hutchinson's teeth, may help to determine the nature of the pulmonary lesion.

3. The symptoms of pulmonary syphilis and tuberculosis are so nearly the same as to be of little value in the differentiation of the two conditions. One point which may be of some help is that the symptoms in syphilis are less aggravated by exercise and show less response to rest than in tuberculosis.

4. The location of the lesions, as determined by physical and x-ray fiindings, is of great importance. Tuberculosis almost always begins at an apex and spreads downward. In its early stages, also, it is a peripheral lesion. Syphilis, on the contrary, almost always, begins at the hilum or in the central or basal portion of the lung, the apices being very rarely involved.

5. The character of the x-ray densities is also of considerable assistance in the differentiation. In tuberculosis there is usually a greater variety of densities, the light and heavy mottling of infiltration and caseation, the heavy, well defined densities of fibrosis and calcification, and the areas of greater transmission of ray, due to cavitation, often being found in the same lung. In syphilis the lesions tend to be rather heavy and homogeneous, with well-defined margins.

6. Repeated negative examinations of the sputum for tubercle bacilli should strongly suggest that a pulmonary lesion is not tuberculous. Exceptions occur, but most cases of active tuberculosis of any extent will eventually show a positive sputum. Even in cases of known pulmonary syphilis the spirochetae are rarely found in the sputum. When several examinations fail to show tubercle bacilli the sputum should be studied for mycelia, pathological yeasts, and other invading organisms.

7. The von Pirquet, or better the intradermic tuberculin test, will be of considerable value when it is negative, since in such cases tuberculosis can be ruled out, but otherwise it is of no value, since a positive reaction does not necessarily mean tuberculosis.

8. A positive Wassermann may give the key to the diagnosis. A positive reaction means the presence of unhealed syphilis somewhere in the body, but, of course, it does not of itself indicate that a chest lesion is necessarily syphilitic. The evidence of a four-plus report in a patient with pulmonary disease, however, points all the more strongly to pulmonary syphilis if there is no syphilitic lesion to be found elsewhere to explain the positive reaction. One negative Wassermann should not be taken as final proof that a lesion is not syphilitic. If negative, the test should be repeated in strongly suspicious cases, and at times the spinal fluid should be tested.

9. The result of antisyphilitic treatment is, in the final analysis, the real test of the correctness of a diagnosis of pulmonary syphilis. Under vigorous treatment the symptoms will rapidly improve. The temperature not infrequently drops to normal after the first full dose of arsphenamin or neo-arsphenamin. Except in the cases where there is fibrosis, the improvement in the lesion itself is much more rapid than is ever the case in tuberculosis, or in most of the other chronic lung conditions.

10. It must ever be kept in mind that pulmonary syphilis and tuberculosis may coexist. The finding of tubercle bacilli in the sputum does not negative the possibility of a syphilitic lesion also, and, owing to their lowered resistance, syphilitics are more susceptible than others to tuberculosis.

The treatment of pulmonary syphilis does not differ from the treatment of syphilis elsewhere in the body. Potassium iodide should of course be avoided, however, when tuberculosis is also present.

REPORT OF CASES

Case 1. W. R. M. L., white, male, age 25, single. Admitted to Sanatorium June 18, 1924. Denies all venereal diseases. No history of primary or secondary

lesions obtainable. No past sickness of moment save influenza in 1918, with apparent complete recovery. Well until February, 1924—onset with sharp cutting pains in lower right chest, increased by deep breathing and relieved by strapping. Diagnosed pleurisy by his physician. Temperature normal or subnormal in the morning and from 100 to 101 in the afternoon for four months previous to his admission to the Sanatorium, in spite of the fact that he remained at complete rest in bed. Had dry, hacking cough two months before admission. No loss of weight at any time, and gained 25 pounds on extra nourishment while in bed.

Physical examination showed at the right base anteriorly slightly impaired percussion note, faint breath sounds, pleuritic friction sounds and a few rales after cough, a few inconstant dry rales after cough at each apex. No scar on penis and no evidence of syphilitic lesions or scars elsewhere.

The x-ray examination on June 18, 1924, showed a homogeneous density at the right base extending from the lower horn of the hilum to the periphery, with obliteration of the right costophrenic angle and an irregular outline of the right diaphragm and pericardium, probably due to adhesions.

Sputum repeatedly negative, Wassermann four plus, temperature 100 to 101, in the afternoon only, for ten days after admission, though patient kept in bed. Temperature continued normal after first full dose of neo-arsphenamin and all other symptoms disappeared. Intradermic tuberculin test negative.

On August 5, 1924, after seven doses of neo-arsphenamin, physical examination shows no abnormal findings. X-ray shows a marked improvement both in the extent and in the degree of the density at the right base. We have not been able to secure subsequent information or pictures of the patient.

Case 2. C. S., colored, age 46, widow, 2 healthy children, 1 miscarriage 16 years ago, no history of lues obtainable. Onset 1 year ago with dry cough, gradual loss of strength and weight—16 pounds altogether—and dyspnea on exertion. No record of temperature.

Physical examination shows bronchovesicular breathing and scattered dry rales after cough at each apex. Slightly increased whispered voice sounds in each interscapular space. Faint breathing, but no other abnormal findings at the right base. No evidence of other syphilitic lesions elsewhere.

X-ray examination shows at the right base a heavy homogeneous density, with fairly well defined margins, extending apparently from the inner half of the diaphragm upward and outward to the level of the fourth rib in the midclavicular line. Internal to this line, and extending to the hilum in the third and fourth interspaces, are smaller splotchy areas of density with less well defined margins. In the lower horn of the hilum is one large pea-sized nodular density, probably due to a calcified gland. Films otherwise negative.

Wassermann four plus. Patient referred to her family physician for treatment, but she did not report to him, and all efforts to locate her by mail and otherwise have been unsuccessful.

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DISCUSSION

Dr. Wm. L. Dunn, Asheville: I sometimes wonder how frequently syphilis in the lung really exists in the practice of those who are handling large numbers of cases of syphilis. Those of us whose work is pretty largely made up of pulmonary diseases run across a certain number of cases. But when we consider that we are practically the clearing-house for the pulmonary cases of perhaps hundreds and hundreds of physicians, it is at once apparent that it cannot be in the ordinary sense of the word a frequent condition. Naturally, those of us who are working so largely in tuberculosis occasionally get cases sent to us that are probably purely syphilis, and not at all tuberculous.

I have seen a very few. I have seen more, I confess, in the last several years, since we have been making routine Wassermanns of every patient that comes to us, than I did before. Occasionally they were suspected before, but now from time to time we come across such cases. They are very far apart, and very few; I am not in position to say how many, but there are very few cases in which we have been led to believe there was simply a syphilitic infection. Of course, the coexistence of tuberculosis and syphilitic infection is apparently rather frequent. I say "apparently" rather frequent.

The dramatic suddenness with which the purely syphilitic lesion will clear up under antisyphilitic treatment is really very interesting. Even after very early doses (I am speaking now perhaps not altogether from my own experience; I am giving the impression from the way I speak that I have seen large numbers of them, but I have not), the way they will clear up is an exceedingly interesting thing. I shall speak of only one case, a comparatively recent one.

A patient came in with a suspected pulmonary lesion. I was unable to convince myself of any active tuberculosis. There was in the left lower a small area of fairly sharply defined density. I say "sharply"; the edges were rather fuzzy, but upon the whole it was a distinct area. The patient gave a positive Wassermann to one antigen and a negative to another. These are always confusing cases. A provocative dose was given, and then we had altogether negative Wassermann. The interesting thing about it, however, was that a second x-ray taken shortly after the provocative dose was given showed a very marked change in the area of increased density.

The patient has not completed anti-syphilitic treatment yet, and I am unable to say what is going to be the ultimate outcome, but I think all of us who have seen any of these cases treated have been struck with the dramatic improvement that takes place.

One of the most interesting series of syphilis of the lung that I know of are cases that have been under the care of Dr. Roy Adams of Washington. He has carried a number of cases through in which he has made a diagnosis of pulmonary syphilis, with serial x-rays,

and you can simply follow them along and almost see the effect of dose to dose.

Coexisting syphilis and tuberculosis, I believe, is much more common than we ordinarily think. In making routine Wassermanns I am unable to say the percentage of cases that prove to be positive. All of these positive cases in our care are given arsphenamin, and the interesting thing about the whole matter is to see, while they undoubtedly have tuberculous lesions, in many cases how extensive infiltrations will clear up—from the x-ray standpoint I am speaking now—entirely related to the arsenical administration.

So probably syphilis of the lung is a much more frequent thing than we think, because so frequently a diagnosis of pulmonary tuberculosis is made, or so often the two conditions coexist. (Applause.)

Dr. J. D. MacRae, Asheville: While on duty at Oteen as radiologist during the Army days, and later as a consultant there, it has been my privilege to examine a great many thousand x-ray films of tuberculous people. Amongst them there was a very small percentage of positive Wassermanns. There were some cases which were positively tuberculous and positively syphilitic at the same time, on whom postmortem examinations were done, and it was my privilege to study the films and to hold conferences with the clinical men handling the cases, and to then see the postmortem examination of those lungs.

The x-ray film which represents a syphilitic lesion and a tuberculous lesion side by side is of such character that it is impossible to determine from the film which is a syphilitic and which is a tuberculous lesion in almost every case that I have recollection of.

There have been very few cases in which I have been willing to say, on examining the film, "This looks like a syphilitic lesion."

Those x-ray films—and I am speaking from the point of view of a radiologist—showed a stellate scar at the base of the lung, as a rule, and were free of tuberculous lesions in the upper lung.

On almost all the cases, with the exception of a few in the early days at Oteen, a Wassermann was done when they were admitted, and I had assembled all of the positive Wassermann cases for quite a good while, and examined them with the clinical men who had charge of the cases. In that series there was not one case about which I was able to say, "Here is a syphilitic lesion." It must depend on the clinical behavior of the case, and I think that Dr. McCain's point is pertinent—that the behavior of the lesion after the administration of the specific treatment is the conclusive thing in diagnosis.

I think that Dr. McCain has covered the subject so well that I can't add to the discussion. I merely state those impressions of my own.

Thank you. (Applause.)

Dr. J. H. Woodcock, Hendersonville: In the negro race we naturally expect syphilis of the lungs more often than we do in the white race.

I think the path that syphilis travels has been very well defined by Dr. McCain. I have found several cases that I thought were syphilis of the lungs, which were so decided. We gave them calcium iodid (that was after we had fully decided they were syphilitic), and it did more good than arsenic. (Applause.)

Dr. Jos. L. Spruill, Superintendent Guilford County Tuberculosis Sanatorium, Jamestown: I want to make a report on one case that has come under my observation in the last twelve months, and I report that because, contrary to the usual findings, this woman's lesion was in her right apex. She was a married woman, thirty years old. She denied all history of syphilis, and I think she was perfectly honest in it. She came to the hospital, sent by one of the local physicians. I examined her and found that she had practically every symptom of incipient tuberculosis, or even further advanced than that, possibly. She had been running a temperature from 99 to 100 or 100.5 for several weeks; cough; expectoration; slight hemorrhage occasionally; loss of weight. Physical examination showed a slight impairment of percussion over the right apex, distinct prolonged expiration, increased whisper, a few moist rales in the front and back above the clavicle.

I unhesitatingly made a diagnosis of tuberculosis. All our patients have Wassermanns made on them. Very much to my surprise, the report came back four plus. I very promptly sent another specimen in, because there were two or three other specimens sent off at the same time. By the way, I want to say I think that is a very safe thing to do in any institution. When you are sending in a number of Wassermanns and you get back positive reports on one or more, it is a pretty good idea to send specimens back again. I have seen one or two cases where the names became mixed up and the reports were erroneous. So I sent another specimen right back to Raleigh and immediately another report came back that it was four plus Wassermann.

I had a genito-urinary surgeon see her and we put her on antisyphilitic treatment. After four or five doses she began to improve rapidly, and after four or five more doses all of her symptoms had disappeared, her x-ray had cleared up, and we had a perfectly well woman. I unhesitatingly changed my diagnosis.

This is the only case that I have seen personally, and I just mention that to show that while all our authorities seem to agree that the case usually is in the base or around the hilum, still we do see that kind of lesion in pulmonary syphilis. I think Dr. Dunn is perfectly right when he states that he believes there is more of this than we find. I think that is true because up until recently we haven't been looking for it very much; we haven't been getting our Wassermann reactions, and I believe we are going to find more of it as we go along.

As to the fact that tuberculosis and syphilis are often found in the same subject, I have seen one other case in our institution, a woman who was admitted there in a far advanced condition. She had cavities throughout both lungs. She had a four plus Wassermann repeatedly, so it is unquestionably true that you can have the two diseases in the same subject. She died, of tuberculosis unquestionably, in a very short time, but she had syphilis, too. (Applause.)

Dr. M. L. Stevens, Asheville: The importance of being on the lookout for pulmonary syphilis was forcibly impressed upon me a few years ago by one of my own errors of diagnosis. A patient, a young man, had been referred to me for treatment for tuberculosis. He gave a history of rectal fistula, which had recurred after operation; of declining health, slight cough, and several rather profuse hemorrhages; and on examination there was marked dullness over almost the entire right upper lobe and altered breath sounds with rales.

I readily confirmed the diagnosis that had been made, although his sputum was persistently negative to tubercle bacilli. After he had been under treatment for some time, on the usual rest cure, with no improvement whatsoever, and with persistently negative sputum, a Wassermann was made and found to be four plus. After the usual course of arsphenamin treatment, all of his physical signs disappeared and he was a well man. He is now in business in Asheville. But I blamed myself for not having had the Wassermann made several months earlier and saving him that time. (Applause.)

Dr. F. R. Taylor, Chairman: Before asking Dr. McCain to close I just want to mention a case that I saw Dr. Henry A. Christian demonstrate at the Peter Bent Brigham Hospital, which shows that every patient who has a spirochetal infection of the lung isn't necessarily syphlitic, and that every patient that clears up under arsphenamin isn't necessarily a syphilitic or tuberculous person, either.

There was a man who had been previously diagnosed as tuberculous, and who had very extensive involvement of the lungs and an enormous amount of sputum which was negative for tubercle bacilli; Wassermann negative. Some one found spirochetes in the sputum. This spirochete was not the treponema pallidum, however; it was an entirely different type. But they put him on arsphenamin, and at the time I saw him, while he wasn't well, he was tremendously improved.

I bring that out simply to show the necessity of making a Wassermann, which is pretty well recognized. The therapeutic test alone will not establish a diagnosis of syphilis. In other words, the fact that a patient with lung trouble clears up under arsphenamin does not prove that he has syphilis of the lung.

Dr. McCain, closing the discussion: I am glad Dr. Taylor brought out that point. There have been reported in the last few years in the United States some cases of what is usually termed bronchospirochetosis, which is a very common condition in China,

and which has a tendency to form lung abscess and which, as he states, clears up rather rapidly under neoarsphenamin.

One of the things which caused me to write this paper was the fact that most of the cases that I found in literature gave a history of having had several months' treatment in a sanatorium for tuberculosis; and the marked similarity of its symptoms to those of tuberculosis made me feel that it was worth while to bring it to your attention.

I haven't had the opportunity to see more than a few cases in the secondary stage of syphilis, but I heard one of the most prominent x-ray men and clinicians in the United States state that he had never seen a case with a mucous patch that he couldn't demonstrate rales somewhere in the lungs, and usually at the apex. So I think it is exceedingly important to get this Wassermann report, and, if it is possible, search to see whether or not there is any apical catarrh there. Apical catarrh from syphilis and influenza are probably the two conditions which are most frequently mistaken for tuberculosis. (Applause.)

EARLY CLINICAL OBSERVATIONS WITH THE COOLIDGE WATER-COOLED TUBE IN DEEP THERAPY

J. Rush Shull, M. D., Charlotte

The application of short wave length x-ray current with a high voltage to deep-seated disease is called deep therapy.

While there is no occasion for the internist or the surgeon to familiarize himself with dosage factors or details of technic, it is desirable that he should understand the underlying principles of radiation therapy. Without this knowledge he may refer his cases at the wrong time or fail to refer patients who might be markedly benefited, or he may specify a particular form of radiation therapy when another sort or a combination would be more desirable. All radiation therapy is based upon the varying susceptibility of different kinds of tissues to its effects. Tumors are classified broadly into adult and embryonal types, the members of the latter group being highly susceptible to radiation while those of the adult group incline to be resistant though in varying degree. As a rule, highly cellular tumors respond more rapidly than those containing much stroma, while, on the other hand, certain benign tumors which are extremely fibrous in structure, yield very readily to radiation, conspicuous in this class being uterine fibroid, which often melts under a single rather mild radiation. Sarcoma responds more readily to radiation than carcinoma. Tumors which show ready response to the initial treatment may behave badly in the end, since they tend to recur and become resistant to radiation. Other tumors diminish slowly in size but may, by remaining localized, become operable.

As to effect on tissues, radiation may be said to sterilize the cells whereby they are not destroyed but their vitality is so impaired that they are rendered incapable of reproduction. This type of

tissue effect is desired in pre-operative radiation of breast cancer and in post-operative prophylactic radiation. It is part of the effect sought in the roentgen ray in deep therapy of pelvic malignancy and in non-malignant conditions such as tuberculosis of the cervical glands. Another type of effect apparently stops short of entirely sapping the vitality of the cells, but depresses them and at the same time stimulates the defense reactions of the hosts. This is the type of effect produced by small frequent doses of short wave length heavily filtered roentgen ray in deep malignancy, especially where the lesions are so extensive that hope of radical cure is not entertained.

The essence of radiation is to apply the dose necessary to the tumor and at the same time to radiate normal tissue as little as possible. The body chemistry is altered, producing a marked reaction often on the part of the patient as well as reaction in the diseased area itself, following deep therapy. We must keep in our minds, therefore, the possible damage to normal cells when delivering lethal doses of x-rays into diseased areas. The psysiology of our patients should first be conserved because we know that nature is putting up a fight against the invading hosts. We surely defeat our purposes when we think only of killing every cancer cell and leave out of account the normal physiology of the patient.

Since installing the water-cooled tube in my x-ray laboratory last October, I have had the opportunity to observe only 28 cases. I realize that this is a very small number upon which to base even early conclusions, and I have, therefore, styled my paper "early observations." To my mind I am sure that the water-cooled tube presents many advantages. The ability to deliver high depth doses into the growth, using one or more ports of entry, in a sixth the usual time required when using the air-cooled universal type tube, the patient's comfort and general physical well-being during and following treatment is markedly improved. Lying in one position for thirty, forty, or sixty minutes, or even longer, as the case might require, is a severe tax on most patients. Using the water-cooled tube the treatment time averages seven to fourteen minutes. Another advantage is to deliver a total x-ray dosage in one or two treatments where the nature of the case requires it. I believe that radiation sickness will be markedly diminished or abolished entirely, as the shorter exposure time decreases the radiation of the blood stream proportionately, and should lessen the deleterious systemic effect. The last advantage that I wish to mention is purely an economic one, conserving the time of the patient and the attendants, and the tremendous saving of time to the roentgenologist in the treatment of his cases.

The technique used by me was developed coincidentally by the education department of the Victor X-Ray Corporation in collaboration with Dr. Case of the Battle Creek Sanatorium and Dr. Schriner of the New York State Institute for Cancer Research. This technique is as follows:

200 K. V.

50 C. M. distance.

1 mm. copper and 1 mm. of Al filter, at 30 MA with a total of 500 M A M to equal 100 units.

The time factor to be derived by charting the pathology, using a modification of the Dessauer chart.

The method of treatment consists of the following routine factors:

1. History of case.
2. Physiology of patient.
   Conserve normal cells, avoid vascular areas if possible—restricted ports of entry, preliminary x-ray examinations of chest, bones, and gastro-intestinal tract.
3. Careful measurements and charting out pathology.
4. Estimation of time factor.
5. Post radiation observations.
6. Neutral or basic dietary.
7. Ultra violet light before and after radiation.

A FURTHER STUDY OF THE POSSIBLE RELATIONSHIP OF THE MONILIA PSILOSIS TO SPRUE AND PERNICIOUS ANEMIA

EDWARD JENNER WOOD, M. D.,* WILMINGTON

Last year with considerable trepidation before this section of the Medical Society of North Carolina I suggested the possibility of the relationship of sprue to pernicious anemia. Since that time there has appeared in the literature much which tends to lend encouragement to me in this belief. There are still those who see no ground for such a view but when one begins the observation of the case at the inception and follows it through the many vicissitudes to its final termination the only difference will usually be one of the degree of the several symptoms, or the order of appearance of these symptoms, or the anatomical selection for the pathological changes. The cases of sprue without achylia gastrica gradually decrease as one begins the repeated fractional gastric analysis throughout the whole course of the disease. The lack of blood changes which some observers still record in sprue will also be eliminated if the period of observation is extended. Many have objected because unfamiliar with intestinal symptoms and even with sore mouth in pernicious anemia. Only a careful study of the case histories of past and present day literature is needed to settle this point. Two recent cases consulted me with the sole complaint of sore mouth and tongue, but more particularly the latter. Many cases of pernicious anemia first come under observation because of the annoying diarrhea.

C. Elders quite recently recorded his belief that there is a close relationship between pernicious anemia and sprue. He regards

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sprue as a deficiency disease and explains the great improvement following the dietetic regime in this way. Patients with pernicious anemia are equally improved in the same way. Even Manson-Bahr, who in the past has so finely differentiated sprue from pernicious anemia, now states that there is a close clinical resemblance of some cases of pernicious anemia to sprue, more especially at the outset.

One of the most vital contributions to this subject was recently made by L. W. Smith of the Harvard Medical School whose work was done in the Philippines. He found an anemia of extra-ordinary degree and concluded that it belonged in the group of aplastic anemias. His further study was shaped by finding incidentally a yeast in the tongue scrapings and in the feces of a case of sprue. The organism was isolated and subsequent study showed that it conformed to the Monilia psilosis (Ashford) morphologically, culturally and serologically. In a large series of controls this yeast was not found. This was the first instance of finding this organism in the Philippines. The Monilia psilosis (Ashford) is differentiated from the Monilia albicans and the valuable point is noted that the latter can be administered in massive dosage to the laboratory animals without harm while the Monilia psilosis causes death even when the dose is small. This method had been resorted to in my laboratory from the very start in differentiating the pathogenic from the non-pathogenic yeasts. Invariably the Monilia psilosis inoculated intravenously in rabbits will cause death except in those cases in which the culture has been kept for many months in laboratory without animal passage.

An important contribution was made to this subject recently at Guy's Hospital. Hampson and Shackle in a study of megaloblastic and non-megaloblastic anemias included sprue in the megaloblastic group. In this work the average diameter of the red blood cell was placed at 7.23 microns. In the active stage of pernicious anemia the measurement reached the high point of 9.40 microns while in sprue it reached 9 microns. The report shows that the measurement curve in sprue reached the same high point as in pernicious anemia. Even during the stage of remission the curve in sprue did not differ from the curve in pernicious anemia. These observations included one case of special interest in this place. The case presented blood changes, achylia gastrica, a history of diarrhea, buccal ulcers, weakness and wasting. At Guy's Hospital the diagnosis of pernicious anemia was made. The patient not being satisfied then went over to the London School of Tropical Medicine where the diagnosis of sprue was made. This, in a word, gives a bird's eye view of the whole situation.

During the past year in my laboratory the Monilia psilosis has been repeatedly grown from pyorrhoeal pus in pernicious anemia. It must be emphatically stated that this organism is not found every time especially when the patient is enjoying a remission. Ashford in his sprue work emphasized this point though not in connection with the pyorrhoeal source. It holds, however, for this source equally as much as for the others. In a number of cases of sprue,

even cases from the East, it has been at times impossible to secure organisms for study. Occasionally a stray yeast cell might be found but to secure colonies for study would be impossible. A large series of controls has been studied to determine whether or not the Monilia psilosis occurs in the mouth in the absence of any change other than pyorrhoea. In all sorts of the most advanced types of pyorrhoea other than that of sprue and pernicious anemia the effort to grow this yeast has been unavailing. It is conservative to say that the Monilia psilosis is not a normal inhabitant of the mouth or the intestinal tract and in this confirmation is to be had in the work of Ashford in Porto Rico and of Smith in the Philippines. It remains to be seen what the significance of the finding of this yeast in the mouth or the intestinal tract without other signs really is. Rarely indeed does this happen. Such cases are now under observation and the vague symptoms of poor health of a very indefinite sort will be watched with keen interest and concern. If in time it is proven that there is an etiological connection between the Monilia psilosis and pernicious anemia it might well be prophesied that there will be a laboratory test of a valuable sort in the study of pyorrhoeal pus for the yeast in question, as the presence of such an organism will probably precede the appearance of the generally recognized changes of pernicious anemia by a period of sufficient length to permit of the institution of some real curative measure. It is to be hoped that in such cases the radical treatment of the gums may be instituted soon enough to avoid the later changes of pernicious anemia. Such an event would help to clarify the mystery of the disease which has baffled all the workers from Thomas Addison to the present day. As Christian has pointed out recently, to consider pernicious anemia only as a blood disease is absurd.

It is interesting at this time to note the title of a paper by H. Z. Giffin and C. F. Dixon, of the Mayo Clinic to be presented at a forthcoming medical meeting in Washington: "Observations on pernicious anemia following ileostomy." We have heard that at this clinic the disease is being treated through the ileostomy opening. Surely this must indicate one trend in the conception of the disease about which there is so little unanimity of opinion.

Much of the year since the session of this Society in Raleigh has been spent in the complement fixation in sprue and pernicious anemia. The technique originally suggested by Carl Michel in Porto Rico and so successfully employed by L. W. Smith in the Philippines is being used. In this plan the antigen is the Monilia psilosis (Ashford) which is autolyzed. A subsequent paper will deal with the details of this work but suffice it to mention in this place a few of the results up to this time. In a definite pernicious anemia which had been followed for about eighteen months and in which a satisfactory culture of the yeast had never been secured the serum gave a positive response which should be classified as four plus. Another case which had been under observation for several years presented a clinical picture which could fit satisfactorily only in the classification of sprue. At the time of observation there was a remission.

The response was a positive classified as two plus. In another case in which a yeast closely simulating morphologically and culturally the Monilia psilosis (Ashford) was found the serological response was negative. Further study of this yeast by intravenous inoculation in a rabbit showed it to be a non-pathogen. This would indicate that it was not the Monilia psilosis (Ashford) and a positive result should not have occurred. In this part of the work there have been surprises in finding unexpected positives when seeking mere normal controls. In such cases further investigation from this new standpoint has brought forth clinical evidence at least justifying a prolonged observation of the case in question. In all this complement fixation work Miss Liles, technician in the clinical laboratory of the James Walker Memorial Hospital to whom I am indebted for this part of the work, used the same antigen made from the Monilia psilosis (Ashford) obtained from the pyorrhoeal pus of a known case of pernicious anemia. In this case the same organism was obtained also from the gastric contents and the feces.

Smith in the Philippines using the technique of Michel and Martinez in Porto Rico in six cases of sprue got a definitely positive response and negative response in over ten controls. This work was further controlled with an antigen of the Monilia albicans. Smith states that the value of the complement fixation reaction in the diagnosis of obscure intestinal disturbances simulating dysentery and sprue should be of inestimable value from the point of view of the therapeutist as it offers apparently a truly specific means of diagnosing this relatively large group of cases.

The study of the yeasts of the whole Monilia group has been made necessary through the fact that morphologically there is only very slight difference between the various members of the group. The Monilia psilosis (Ashford) falls in that group which produces gas in cultures containing maltrose, dextrose and levulose, but there are numerous other yeasts doing likewise which are non-pathogens or at least are not the Monilia psilosis (Ashford). Before this present work can be carried to a satisfactory conclusion it becomes necessary to determine all of the yeasts of the intestinal tract beginning with the mouth and the gums down through the various divisions of the tract. After this is done these many organisms must be divided into pathogens and non-pathogens. It will be seen that this requires inoculations for every organism studied. But even after an organism is found to be a non-pathogen it cannot be discarded for it will be met with again and points of definite distinction must be sought.

The confusion which has existed for years regarding the differentiation of the Monilia albicans and the Monilia psilosis is reasonable and apparently unavoidable. It is to be hoped that sufficient progress has been made to affect this point and that some satisfactory means may be soon forthcoming. Culturally the differentiation cannot be satisfactorily made by the average worker. My own plan is to subject every culture to inoculation intravenously in the rabbit. As stated above the animals stand the Monilia albicans even in large

dose, a point stressed by L. W. Smith, while the Monilia psilosis (Ashford) produces a rapidly fatal septicaemia.

When it is considered that the yeast being studied has a diameter of from two to seven microns it can be appreciated that going over with it, attached to its surface, may be many bacteria of many sorts. Some of these bacteria may be, and likely are, fermenters of various sugars. Turbidity also may be produced by such contaminating organisms. Therfore it is readily understood that bacteria may, and likely do, account for some of the cultural returns which are inaccurately attributed to the yeasts. To secure a bacteria-free culture in my hands has been most difficult. Great dilution and much shaking have failed. Plates inoculated with such material show just what can and so often happens. Not only may colonies of many different bacteria be found but also more than the one yeast being studied. Another source of possible error which has impressed me is the purity of the sugars used for the fermentation determinations. The sugars supplied in this country by the Digestive Ferments Company in Detroit probably are better for such work than the products obtainable in the past. Certainly my experience justifies me in this opinion. In looking over the price lists of the sugars used by the European mycologists one cannot but be impressed with the great difference in price. It may be that if the purest American sugars, regardless of their greater costliness, were employed the fermentation results would be less confusing. Assuming such a possibility I have ordered from London a lot of the same sugars used by Professor Castellani and expect to make comparative studies. These two procedures added to the aid given by the complement fixation work are hoped to make a better basis for a revised classification.

Right now much of my time is being devoted to attempts at the immunization of sheep. One procedure consists in the intravenous inoculation of gradually increasing amounts of a Berkefeld filtrate of the Monilia psilosis (Ashford) grown in dextrose peptone water. The assumption on which this is done is that the organism in question produces a soluble toxin. The first returns from this work were disappointing but further study indicates the possibility of the serum of the sheep so treated containing antitoxic properties. The second procedure consists in the intravenous inoculation of the sheep with gradually increasing amounts of the killed Monilia psilosis (Ashford). The final test consisted in inoculating the two sheep with a living culture of the Monilia psilosis (Ashford) the virulence of which had been greatly enhanced by repeated animal passage. The sheep treated in the latter way died very promptly. The sheep treated with the filtrate was made sick but lived for days and was finally killed. It seemed reasonable to believe that if the filtrate plan had been carried further the animal would have been able to withstand the infection successfully. This work will be repeated profiting by the error of the past experiment.

An apology is due for consuming the time of the section with a presentation merely of problems, difficulties and failures. It is done

merely to save some other worker from costly error and in the hope of valuable criticism which has proven of such great help to me in the past.

DISCUSSION

Dr. J. M. Northington, Charlotte: I am always glad to hear something from Dr. Wood, because he always has something interesting and instructive to say. This is particularly true of this investigation, which holds out some promise of proving something that will be of value in the treatment, either curative or prophylactic, of so baffling a disease as pernicious anemia.

I believe I had occasion in Charlotte to speak to the chairman of this section about a report that had been recently made from the Hopkins Clinic on a series of cases of pernicious anemia that had been treated alternately, the odd numbers being transfused, and the even numbers not transfused. The average length of life of those that were not transfused was greater than for those that had been transfused. That, at the present time, so far as I know, is about the only therapeutic measure which is advocated in cases of pernicious anemia. Certainly Dr. Wood holds out a very encouraging prospect looking to a treatment which is based on a specific etiologic factor.

I had occasion in Minnesota to observe a tragedy in the treatment of pernicious anemia. The patient was a doctor who was the superintendent of the School for the Feeble Minded at Faribault. He was transfused. It seems that he had had pernicious anemia for a great many years. He had fallen upon evil times from a pecuniary standpoint and had been obliged to discontinue his life insurance; at least he had accepted a paid-up policy which expired just a few hours before he expired, and it is more than likely that his treatment served only to deprive his family of the ten thousand dollar policy.

This investigation of Dr. Wood's we hope will result in a more encouraging therapeusis. (Applause.)

Dr. P. P. McCain, Sanatorium: The medical profession of North Carolina is very greatly indebted to Dr. Wood for his splendid research work. He and one other man are doing more toward advancing the medical profession of this state than any other two men in North Carolina.

I also want to express my appreciation to Dr. Wood for the great help that he has been to us at the sanatorium in diagnosing some of our pulmonary cases which we felt were non-tuberculous—and after receiving his help we have become more convinced than ever that they were not tuberculous—and for helping us to come to some definite conclusion as to a number of chronic diarrheas which we felt were probably not tuberculous.

I also want to add emphasis to what Dr. Northington has said about the great hope that Dr. Wood holds out for us in finding a cure for pernicious anemia or sprue. To my mind, Dr. Wood has proven that sprue and pernicious anemia are one and the same disease. I

am mighty glad that Dr. Wood is not simply interested in science for science's sake; he is interested in the patient as well as in science, and the fact that he is doing so much toward trying to produce a cure makes his work all the more valuable. (Applause.)

Dr. L. G. Beall, Black Mountain: It was my fortune, or misfortune (I don't know which) to have under my care the wife of a returned missionary, with a very distinct case of sprue. The case had been diagnosed by the physicians in China and this lady had been returned to this country. She came under my care for rest, and I was completely at a loss to know what to do for the sprue. However, following out my usual method of cleaning up every source of infection that I could find, I had this lady's mouth very carefully taken care of by a dentist, and she immediately began to improve. I didn't know the cause of it, but I am very glad today to find that Dr. Wood has probably discovered what I didn't know was the reason that I got improvement in this case. Probably the source of infection was removed, and the natural resistance of the body helped her to take care of the infection herself, together with the usual method of trying to aid her with diet, rest, and other therapeutic measures. (Applause.)

Dr. K. C. Moore, Wilson: I didn't hear quite all of Dr. Wood's paper. I came in a little bit late, but I should like to ask him a question or two about the age of these patients.

Have you seen pernicious anemia in young people to any great extent? What I mean by "young" people is people from fifteen up to thirty or thirty-five. Practically all of the pernicious anemia that I have seen has been in people of forty or over, I think.

I should also like to know if up to the present time Dr. Wood has produced any cures by antitoxic treatment, or if he has used any antitoxic treatments in human beings.

I have seen, during the last five or six years, possibly a half dozen cases of pernicious anemia that I have carried through a long series of transfusions. I recall one case; our diagnosis was made about ten years ago of an achylia, and about two years later the diagnosis of pernicious anemia was made. He received three transfusions from Dr. Barker, of Baltimore, and was built back up to normal. Then he came back home and stayed until the following spring, when his blood picture went down as low as 750,000. He went back to Baltimore and received a series of seven transfusions, which only carried him to a blood count of 3,000,000. He lost this blood within six weeks after returning home, and then I began to transfuse him, and I think during the last four years of his life he received something like thirty-five or forty transfusions of an average of a quart of blood.

Four or five years ago I was at Rochester and I talked to the doctor there who had charge of this particular branch, and I asked him what quantity of blood they generally used in their transfusions. His reply was that they very seldom gave more than a pint, and

that the transfusion was given not so much to improve the blood as to stimulate the blood-forming organs to activity. It is true that transfusion increases the blood volume, but my experience in pernicious anemia has not been that. In those severe cases of pernicious anemia that I have transfused, I have found that the larger the transfusion, the greater the success, the quicker I could bring them back to somewhere approximating a normal blood picture.

In the case of this one man that I mentioned whom I sent to Baltimore, I am satisfied that during the last six or seven years of his life, he received not less than ten gollons of blood, and a pint transfusion very seldom did any good. The first transfusion he received at Baltimore was 2500 cubic centimeters of citrated blood, the largest transfusion I have ever heard of. The largest I have ever used was about 1400, and my experience, as I say, has been the larger the transfusion, the better the result.

I have a case now that I transfused about twelve months ago. I haven't seen the man in twelve months, but this was a referred case and I was talking this morning to the doctor who referred it to me. This man received three transfusions of 1000 cubic centimeters each, and his blood was built up to normal. He is now on the decline, but at the present time he is in the hands of a chiropractor, and the chiropractor has him thinking that he is improving.

I had another very interesting case of pernicious anemia, in which I intended to transfuse, but on taking him to the hospital and putting him on a good forced diet, and by the use of iron arsenic, both by mouth and intravenously, I was able to get his blood picture up to normal, and he has retained it for nearly two years. He is now going down. This was also a referred case. I saw him on the streets of Wilson just a few days ago, but have not had an opportunity to go over him.

At the present time I have a young lady, a school teacher, who gives a definite achylia, with the blood picture of a secondary anemia, and in this case I also found the estivo-autumnal type of malaria. In the beginning I felt pretty sure that I had a case of chronic malaria, but after thoroughly synchronizing the patient, getting rid of the malarial infection, I am satisfied that it is really a case of pernicious anemia. I think this is the only case in which I could positively say it was pernicious anemia in a person under thirty years old.

Quite recently I had a baby seventeen months old whose general appearance was that of a pernicious anemia. The blood picture showed the very characteristic poiklocytosis, the extreme variation in the red blood cells from the very small to the tremendous size, a condition, I think, which you get in practically no other disease. As far as I have been able to determine, the blood cells usually are of a more uniform type in secondary anemia. This case was transfused with an apparent improvement for a few days, but three days after the last transfusion (she was transfused twice) the patient died rather suddenly.

The white count on this particular case, though, was 88 per cent lymphocytes, 8 per cent eosinophils, and 4 per cent polynuclears. The child was very much distended. The abdomen was very tympanotic, and I never could make a satisfactory palpation of the abdomen, but the day before she died, I had her x-rayed, and it showed the spleen extending down to the crest of the ilium. In this case, while the blood picture was somewhat that of pernicious anemia, I believe it was more of a leukemia of some type. I was very anxious to get a "post" on this case, but the family absolutely refused it.

I certainly enjoyed the paper by Dr. Wood, and I hope that the line of work he is doing is going to offer something better than what we have had up to date in the handling of these cases of anemia. (Applause.)

Dr. D. R. Murchison, Wilmington: It is perfectly obvious that Dr. Wood realizes quite well the tremendous importance of the work that he has done. It is revolutionizing work, and it is original.

There has been a great deal of reluctance on the part of some men to accept his work, but he has taken up every step in detail and with great thoroughness; he has met problems on all hands; and it is certain that he has gone about it with very searching accuracy.

I want to cite the case of one patient of mine that had undoubted pernicious anemia, in whom there was no obvious pyorrhea, but in taking a culture from the gums with a small platinum loop, there was demonstrated and grown in a high acid medium the characteristic Monilia psilosis. (Applause.)

Dr. W. H. Sprunt, Winston-Salem: I really know very little about the subject of pernicious anemia, but as to the question of the transfusion used at the Mayo Clinic, I do know that it has been their policy to use small amounts. Most of the transfusions I had occasion to see were given in surgical patients, and in those cases they frequently gave only 300 c.c. of blood. I don't believe I have seen more than 1000 c.c. given, but I shouldn't like to make the statement definitely that there has never been more than that given. The cases of pernicious anemia that are transfused there are taken charge of by the medical department. The only thing I know about those is what anybody would know who had happened to be visiting there and seen them done. (Applause.)

Dr. Moore: I would like to say that the question I asked as to the size of the transfusions applied to the pernicious anemia cases only, and not to the surgical cases. I didn't mean to leave the impression that they said they never give a transfusion of over 500 cubic centimeters, but they stated that in the pernicious anemia cases it was the action of the blood on the blood-forming organs that really did the good, and that they very seldom gave more than 500 c.c.

Dr. F. R. Taylor, Chairman: Before Dr. Wood closes, I want to ask one question, whether you ever get any cases of sprue without achlorhydria, that is, with free hydrochloric acid present.

Dr. Wood, closing the discussion: I think I shall start with that last question first. That is one of the greatest bones of contention. A great many of the Americans are disposed to think that without achlorhydria the diagnosis of pernicious anemia is never justified. In the European literature recently there has been a good deal of latitude demanded in that because there are cases of unquestioned pernicious anemia being described that do show the presence of free hydrochloric acid.

The question of achlorhydria in sprue is the one point and the only remaining point on which differentiation between pernicious anemia and sprue could possibly be based. In sprue it was supposed that there was always present free hydrochloric acid. In pernicious anemia it was supposed that free hydrochloric acid was always absent, and it was on that point that the differentiation was made. However, that was in the day when gastric analyses were rather infrequently done and before the day of the fractional gastric analysis. I have seen a most remarkable variation in the gastric contents in sprue. In sprue achylia gastrica does not develop so soon as in pernicious anemia. I am convinced that achylia gastrica will develop in sprue before the termination of the disease, certainly in the vast bulk of cases.

The English authorities are unwilling to refuse to make the diagnosis of pernicious anemia because free hydrochloric acid is present. On the other hand, the Americans are unwilling to accept any diagnosis of pernicious anemia with any free hydrochloric acid present. My own feeling is that sprue has, eventually, achylia, but that it develops usually late.

I would like to say right here that my very good friend, Dr. Henry A. Christian, of Boston, who has been giving me wise advice for a long time, has suggested that sprue may be the same disease as pernicious anemia, modified in its manifestations by changes in living conditions, in food, in clothing, in habits, that occur when an individual leaves a temperate zone and goes to the tropics. He thinks that there is a very strong probability that the two things are the same, and he thinks there is a very strong probability that these external influences, these living conditions, have produced the different types of symptoms.

In sprue, the brunt of the thing, whatever it may be (I shall not call it an infection yet, but whatever the process is) falls primarily on the mouth and the small intestine. The small intestine presents the pathology of the disease. In pernicious anemia the brunt of the thing (I am, of course, not speaking of the blood) falls on the stomach and on the nervous system.

We have been very fortunate in the series of cases on which my observations are based in finding definite subacute combined degeneration of the cord in sprue coming from Porto Rico, sprue that was diagnosed as sprue not here by me, but in Porto Rico by men who see sprue every day.

Dr. L. W. Smith of the Harvard Medical School, who has been working in the Philippines, replying to Dr. Christian, stated that in Manila, at the Manila General Hospital (a tremendous hospital), there was only one case of pernicious anemia, and that was an imported American case.

Dr. Christian suggests that this may be a justification for his other suggestion that pernicious anemia occurs in the Philippines, but that it manifests itself in the clinical picture that we call sprue. Therefore, we have in Boston pernicious anemia, in Manila sprue, varied entirely by external influences, food, clothing, and so forth.

Dr. Moore asks a very pertinent question about the age of these cases. I didn't go into the clinical side of this because I did that last year. Apart from the work of William Hunter, the thing that made me suspect that the gum might be a fertile source for investigation in these cases, supplying the entrance place of this infection into the body, was the fact that so far as my experience went, and so far as is shown by the vast bulk of literature on sprue, as well as pernicious anemia, for that matter, it does not occur until the pyorrhea age, it does not occur until close to the thirties, and the bulk of cases will not occur early in the thirties.

The question of pernicious anemia in children is one that has been discussed a good deal, and every now and then in the European literature there will be a report of a case of pernicious anemia in a child, but when you read the report you will find that they are not referring to Addisonian anemia. They are only using the adjective "pernicious" to indicate a malignant form of secondary anemia.

Dr. Moore asked whether the work that I am doing has been adapted to therapeutics. It hasn't, and it isn't going to be for a long time, and it will never be until the test of the antitoxic power of the sheep's serum that I am at work with, has been proven to be of sufficient consequence to be worthy of a trial. Then Dr. Shore has agreed to take those sheep and bleed them in the State Laboratory of Hygiene and bottle the serum, in a perfectly safe way, just as our diphtheria antitoxin is produced. The idea is to eliminate any possible error of technic on my part in the bleeding. The application of this to the treatment of the disease in man is for the future.

Dr. Northington started the discussion of transfusion in the treatment of pernicious anemia. I believe the only successful treatment of sprue up to now has been by the use of transfusion. The cases of sprue that do well in my hands are those cases that are treated for the blood destruction, without attempt at removing the etiological factor. I think transfusion is just as much in order in sprue, if you want to call it sprue, as it is in any other condition of blood destruction.

Dr. Beall refers to splendid results with the cleaning up of the gums of his missionary. I believe the only case of sprue that I have any suspicion of being cured was in a patient of Dr. Sadler of Whiteville, who, on the advice of some good lay friend who knew a great deal about dentistry, got the patient to go to the dentist and have

every tooth removed. I think she has come nearer fulfilling the requirements of a cure of sprue than any patient I have ever seen. I am convinced that the first thing to do for these people is to clean up their mouths, and I am convinced further that in any case of pyorrhea where the Monilia psilosis is found, the dental treatment ought not to be conservative, but extremely radical, and it is our duty, as soon as we can, to send to the dentist a report of the presence of this infection, so that he may shape his work.

I appreciate very much Dr. McCain's kind words. I don't deserve them, but I do appreciate his expression, and I want to repeat again that the work I have done could never have been accomplished but for the wonderful coöperation that he and his men have given me all the way through.

I was glad Dr. Murchison was present to verify my statement about the finding of the Monilia psilosis in the pyorrheal pus in the case of pernicious anemia. That protects me from what happened in New Orleans.

Dr. M. L. Stevens, Asheville, was nominated for recommendation to the president as chairman of the section.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

Chairman: Henry L. Cook, M. D., Fayetteville

A REVIEW OF THE METABOLISM OF THE CARBOHYDRATES

I. H. Manning, M. D., Chapel Hill

The introduction of insulin as a therapeutic agent in the treatment of diabetes mellitus and other conditions as well has focused attention on the metabolism of the carbohydrates. It seems desirable, therefore, to review our knowledge of this important subject.

The study of the dietetic treatment of diabetes has brought to light the metabolic interrelationship between the carbohydrates, proteins, and fats. When carbohydrates are entirely excluded from the diabetic diet sugar continues to be excreated in the urine, though in reduced amounts. On an exclusively protein diet it was found that for each 100 grams of proteins the totally depancreated animal excreated 58 grams of sugar, the nitrogen-dextrose ratio in the urine being constantly one to 3.65. On an exclusively fat diet the animal also continued to excreate sugar, a part of which is formed during the metabolism of the tissue proteins and a part from the glycerine of the fats. By calculation each one hundred grams of fat will yield 10 grams of sugar. Therefore the normal individual living on a standard Voit diet consisting of 120 grams of proteins, 500 grams of carbohydrates, and 50 grams of fats, the total heat value of which is approximately 3000 calories, about 75 p.c. of the heat of the body will be derived from the metabolism of the carbohydrates.

The acidosis of diabetes, characterized by the appearance of the "ketone bodies" (beta-hydroxybutyric and diacetic acids and acetone) in the urine, with a depletion of the alkaline reserves and an ultimate change in the reaction of the blood towards, though never actually reaching acidity, is the immediate result of a faulty fat metabolism, brought about by an inadequate carbohydrate metabolism. A somewhat similar condition may result in the dietatic treatment of obesity if one is unmindful of the danger of an excessive fat metabolism. "The fats are burned in the heat of the carbohydrates." Shaffer has demonstrated a definite quantitative relationship between the ketogenic substances (practically the fats) and the antiketogenic substances (practically glucose) of I: I, or for practical dietetics one gram of glucose for each two grams of fats. This ratio will hold for the normal individual as well as for the diabetic.

Quantitatively as well as qualitatively, therefore, the metabolism of the carbohydrates is of the first importance. Without it more than one-half of the food value of the proteins will be lost and the metabolism of the fats breaks down with the production of acid bodies which directly threaten life.

The three common food carbohydrates, starch, cane sugar, and milk sugar, are, in process of digestion, converted into glucose. (The levulose and galactose formed in the inversion of cane sugar and milk sugar respectively may be disregarded.) The absorbed sugar is transported to the liver in the portal blood and is converted into glycogen and stored in the liver cells. Later the glycogen is converted into glucose.

Glycogenesis and glycogenolysis are the first stages in carbohydrate metabolism, and McLeod holds the view that they are essential changes for all subsequent stages. While glycogen may be found in all active tissues except perhaps the nervous tissues, it is most abundant in the liver and muscles. Glycogen is the stored form of the carbohydrate in the animal body. It is stored in the muscles as a source of energy, and used for this purpose. In the liver, however, it has quite a different purpose. Glycogenesis in the liver prevents an excess of sugar from entering the blood during the period of alimentary absorption. In the normal individual a hundred or more grams of glucose may be fed by the mouth without increasing the blood sugar by more than a trifling amount. The significance of this function of the liver is more fully appreciated when it fails, as it may do in the so-called alimentary glycosuria and in all stages of true diabetes as well. On the other hand, glycongenolysis, which takes place especially during the interabsorptive periods, protects the blood from a too low sugar content, a hypoglycaemia, which, as we have learned from experiences with insulin, is a matter of even greater importance. The glycogenic and glycogenolytic function of the liver may be altered in one direction or the other. In hypothyroidism (cretinism) and in hypopituitrism (Frolich's disease) glycogenesis is so accelerated that very large quantities of glucose may be fed by the mouth without producing a glycosuria; the sugar tolerance is enormously increased. On the other hand this function is deficient in all stages of diabetes mellitus. Glycogenolysis is increased in anaesthesia, in emotional glycosurias, and glycosurias from nervous disorders, in the puncture diabetes of Claude Bernard, in hyperthyroidism, in hyperpituitrism, and following the injection of adrenalin and pituitrin. Carbohydrate metabolism may therefore break down at this stage.

In the blood the normal range of sugar lies between 90 and 120, the average being about 100 milligrams to the 100 c.c., or 0.1 p.c. While there are probably no metabolic changes of consequence in the blood the presence of sugar, even in so small an amount, is a matter of vital importance. An excess as seen in diabetes will stimulate the island cells of the pancreas and, if persistent, will lead to exhaustion and ultimate degeneration of the secreting cells. Moreover, and excess affects the normal functioning and particularly the resistance of all body cells. On the other hand, a hypoglycaemia (75 milligrams or less per 100 c.c.), as previously mentioned, may bring about hunger, sweating, nervous irritability, finally convul-

sions and death, a symptom complex which we have come to know as "insulin shock."

The final stage in carbohydrate metabolism is an oxidation which takes place in all active tissues, but particularly in the muscles. In the normal individual this is complete, the end products being carbon dioxide and water. We cannot assume that the burning of the sugars, the glycolysis, occurs in the body as it does in a flame, though the end products are the same,—rather that it is a progressive process with a number of intermediate compounds formed between the beginning and the end.

The intermediary metabolism of the carbohydrates is imperfectly understood. Upon purely chemical grounds a simple scheme for a progressive oxidation of glucose with a number of intermediary acids, glycuronic, saccharic, lactic, pyruvic, acetic acids, acetaldehyde, and finally carbon dioxide and water may be conceived and justified on the ground that comparable changes are brought about by the action of bacteria or certain yeasts or molds, but whether glycolysis in the body actually follows this simple procedure is very doubtful. Only two of these intermediary acids are known to occur in the body. First, glycuronic acid, which is found occasionally in the urine paired with some of the toxic products of intestinal putrefaction, indol, skatol, and the like, but there is no substantial proof that its occurrence indicates the normal course through which glucose passes. Second, lactic acid, which is so constantly present during glucose metabolism and is so constantly increased under condition in which there is an increased metabolism of glucose that we cannot escape the conviction that it is constant intermediary in the metabolism of glucose; in fact the problem of intermediary carbohydrate metabolism centers around the steps that lead up to and follow the formation of lactic acid. The problem is still very far from being satisfactorily solved, and it seems undesirable for us to attempt to outline the various theories which have been proposed. It is, however, safe to say that until lactic acid is formed, very little of the heat of the carbohydrates has been set free. Moreover, it seems clear that only a fraction, perhaps only a fifth of the lactic acid formed is actually oxidized, but the larger part reverts to sugar or glycogen.

In 1885 Von Mering and Minkowski demonstrated that removal of the pancreas from an animal was immediately followed by diabetes. Laguesse and Diamare, and later Bensley, definitely established the relationship between such a diabetes and the island of Langerhans in the pancreas. Opie and other pathologists described histological changes in the island cells in individuals dying of diabetes, and in 1922 Banting and Best discovered insulin, the missing link in the chain of evidence that the islands of Langerhans secrete an internal secretion which is essential in the metabolism of the carbohydrates.

A discussion of insulin as a therapeutic agent is not within the scope of this paper, but as an agent through the use of which some

of the problems of carbohydrate metabolism may be cleared up, it offers most interesting possibilities. Insulin, as is now well known, injected in proper doses, repeated at regular intervals, will relieve the metabolic difficulties of the diabetic in very large measure; it will restore the glycogenic functions of the liver and muscles; it will reduce the blood sugar to the normal level, remove the glycosuria; correct the acidosis and restore the lost capacity of the tissues to utilize sugar and fats; in other words it replaces the functions of the islands in diabetes in the same sense that thyroid extract (or thyroxin) replaces the function of the thyroid in cretinism.

The physiological mechanism by which insulin acts in the manner described is intimately bound up with the chemistry of the sugars which is perhaps the most difficult subject in the field of organic or biological chemistry. There are, as is well known, sixteen sugars with the general formula $C_6\ H_{12}\ O_6$—sixteen isomers, only four of which can be directly used by the body. The usual explanation offered for this fact is that the peculiar arrangement of the atoms in the molecules of these four sugars brings them within the sphere of action of the special enzymes of the body. The structure of the molecule appears to be the determining factor in the assimilability of the sugars. Irvine makes the interesting suggestion that each carbon atom in the molecule has its own particular function—and that they are not as cogs in a wheel, all of the same value.

The more recent investigations of the structure of the glucose molecule by Fischer and later by Lowery and Irvine point to the existence of at least three isomeric forms which are indicated by the prefixes alpha, beta, and gamma. When ordinary solid glucose is dissolved in water and examined immediately by the two common methods, copper reduction and the polariscope, and again at a later period, as was observed by Dubrunfont as early as 1846 and more recently by Lowery, while the copper reduction test remained the same, the polariscope reading had fallen to a much lower level. The apparently spontaneous change was later found to be due to a molecular re-arrangement, the phenomenon of muta-rotation, and upon investigation of the solution after it had become stable, two sugars were isolated, alpha and beta glucose, the one with a relatively high and the other with a relatively low rotatory value, $+109°$ and $+19°$, and these existed in the solution in certain proportions, in equilibrium, the rotatory value of the mixture being constantly 52.5 degrees. The structure of these two common forms of glucose has been very carefully worked out by Fischer and Irvine, and the difference between them seems to be in the position of the alcohol, the (OH) group attached to the first carbon atom. Both forms have an oxygen atom linking the first and fourth carbon atoms, a butylene linkage. The gamma form of glucose has not been identified, but while it has the same reducing value on copper solutions, its rotatory value is lower than either the alpha or beta forms. Irvine suggests that it has an oxygen atom linking the first and

third carbon atoms, a propylene linkage. It appears to be much more reactive and to revert easily to the alpha and beta types.

Winter and Smith, applying these principles to the study of the normal and diabetic blood sugars, have presented evidence to show that the normal blood sugar is the gamma type, whereas the diabetic blood sugar is the alpha and beta types, and suggest that in the normal the internal secretion of the pancreas (insulin) brings about this transformation, whereas in the diabetic in the absence of insulin the change fails to take place. They regard the conversion of the alpha and beta glucose into the gamma glucose as fundamental and essential to the assimilation of glucose—a preliminary rearrangement in the sugar molecule without which there is no glycogenesis and none of the later stages through which the sugar molecule must pass for its complete oxidation. The function of insulin is, therefore, to bring about directly or indirectly through some other agent through which it may act, a re-arrangement of the atoms in the sugar molecule.

As attractive as this theory is, there are many difficulties in the way of its complete acceptance. Contrary evidence seems to be accumulating, and criticisms of the methods of dealing with such an unstable sugar are not without substantial foundation. However, it seems clear that in the presence of insulin the sugar as absorbed from the alimentary canal or the ordinary solution of glucose injected intravenously is converted into some much more reactive form, a change which cannot be affected in a test-tube, nor probably in the blood itself, but in the tissues. The hypoglycaemic action of insulin is not due to an immediate oxidation of the blood sugar, but rather to its passage into the tissues where it is condensed in part into glycogen and in part, if not in larger part, into as yet some unrecognized compound.

The quantitative relationship between insulin and the sugar reactions, one unit to 2 grams of sugar, suggests a chemical union between the sugar and the insulin, the result of which is a highly reactive compound—a role comparable to that of iodine in the thyroxin molecule, or if not with sugar itself some third substance supplied by the tissues, the presence of which enables the tissues to assimilate sugar in the normal fashion.

DISCUSSION

Dr. Wm. Allan, Charlotte: Dr. Manning has shot over my head in discussiong the composition of the glucose molecule, but, in attributing the regulation of blood sugar to the liver, he has suggested a matter of very practical importance—alimentary glycosuria. About fifteen per cent of the people whose presenting symptom is glycosuria, are instances of alimentary glycosuria, without limitation of sugar tolerance and. hence, without diabetes. At the present time, these people are entirely unable to secure life insurance and, many of them, are being dieted for diabetes. About three-quarters of these alimentary glycosurias have a low renal threshold, from .11 per cent to .15 per cent, so that the normal rise of blood sugar, after

an ordinary meal, will go above their threshold, with resulting glycosuria. There is also a type in which there is a high, quick rise of blood sugar above the average threshold of .17 per cent, suggesting that there is a delay in the mechanism which starts the secretion of insulin; as soon as insulin secretion gets well under way, the blood sugar promptly drops below the normal threshold.

In response to Dr. MacNider's suggestion that a low renal threshold may be due to temporary liver injury, I can cite a case of alimentary glycosuria which has been under observation five years, without any variation in a threshold of .11 per cent. At present, I am investigating alimentary glycosuria due to low renal threshold in four generations of a large family in which this anomaly seems to be hereditary, so that temporary liver injury would not seem to be a factor in alimentary glycosuria.

Dr. B. C. Nalle, Charlotte: Dr. Manning's paper is very instructive, though it shoots pretty high over our heads. I have been particularly interested in carbohydrate metabolism, especially in pregnant women, and I want to see if Dr. Manning will not answer a question for me. Last year before the State Medical Society, I read a paper on this subject, and advanced the view that the faulty carbohydrate metabolism of pregnant women might be produced by excitation of the sympathetic nervous system with the consequent stimulation of the thyroid, pituitary and adrenal glands, which interferes with sugar metabolism and the depression of the parasympathetic, and, thereby, the depression of the secretion of the pancreas, which helps the metabolism of carbohydrates. We know that the sympathetic is stimulated and the parasympathetic (vagus) is depressed by emotions—anger, fear, etc. I have found that faulty carbohydrate metabolism is most frequent in nervous, emotional women, in those who are afraid of or opposed to being pregnant.

My question is whether Dr. Manning thinks the emotions of the pregnant woman are sufficient stimulation to the sympathetic system for it to affect the glands of internal secretion and so interfere with their carbohydrate metabolism?

Dr. Wm. deB. MacNider, Chapel Hill: I hate to hear anybody mention the liver, for the reason that we know nothing in the world about it, especially in the pathological stage. I feel quite sure there is a definite relationship between certain kidney things and the liver. Of course, the liver has an amazing ability to repair itself if you leave it alone; it will come back and hyperglycemia will disappear. The older doctors used to talk a lot about the liver, and we younger ones leave it alone. It may be that some of these cases that Dr. Allan and Nalle see are not due to increased output of epinephrin but to transient liver disease.

Dr. Manning, closing the discussion: I did not say anything about renal glycosuria in my paper because in renal glycosuria the metabolism of carbohydrates is not involved. The general idea of renal glycosuria seems to be a "leaking kidney." There has been

for many years a discussion among physiologists as to how sugar is retained in the blood. It is easily diffusible and will pass freely, apparently, through any sort of animal membrane. Why it does not appear in the urine at all times has not been worked out. It was suggested some years ago that the sugar in the blood existed in some colloidal combination which prevented its escape through the glomerular epithelium; the suggestion was entirely disproved by Abel's vivi-diffusion experiments, in which it was shown that the sugar in the blood is in an entirely and freely diffusible form.

Sugar is among the so-called "threshold" substances, by which is meant that normally when it reaches a certain level of concentration in the blood it begins to appear in the urine. Sodium chloride is also a "threshold" substance, and the amount found in normal urine is the excess, the overflow, so to speak. The classification of blood constituents into threshold and non-threshold substances is perhaps an easy way of stating a fact, but offers no explanation of a curious phenomenon. Perhaps the chemist would prefer to speak of the concentration as the "mass" and attempt to correlate it with the "mass laws."

The resorption theory which has been referred to here has been the subject of active controversy and energetic experimentation since the days of Ludwig. It has been more recently revived by Cushny, and subjected to a critical investigation by Richards. It assumes that all of the urinary constituents escape through the glomerular epithelium in no greater concentration than found in the blood, and this very dilute urine is concentrated by resorption by the tubular epithelium. The experimental evidence, especially as furnished by Richards, is strongly against the theory. In terms of this theory a renal glycosuria is a failure of resorption.

A neurogenic glycosuria may be related to disturbed functions of the ductless glands, the thyroid, adrenal, or pituitary. Cannon has shown conclusively that the thyroid is under sympathetic influence. McLeod, Cannon, and Stewart have demonstrated a definite influence of the sympathetic over the functions of the adrenal. The chapter on the pituitary will probably have to be re-written. Adrenalin seems to be antagonistic to the action of insulin. Insulin "shock" can be relieved sometimes by adrenalin. The action of adrenalin may be to depress the secretion of insulin, or, as seems to be a more reasonable explanation, to increase glycogenolysis in the liver and so increase the blood sugar and induce a glycosuria.

It may be of interest to say in this connection that insulin and sugar injections are reported as bringing relief in cases of pernicious vomiting, probably by correcting the acidosis.

THERAPEUTIC USES OF ACONITE AND VERATRUM VIRIDE

A. A. Kent, M. D., Lenoir

This paper is intended to supplement, as far as that can be done by a general practitioner, two preceding discourses by Dr. Wm. deB. MacNider. The first discourse was delivered by him at

a meeting of the State Medical Society in Asheville, on the physiological actions of aconite. It was received by the profession with marked interest, as is always the case with his very scientific pronouncements. The second discourse was received, with like interest, at a district meeting in Salisbury. It dealt more especially with the action of veratrum viride, as found in his laboratory experiments. The author of this paper undertook, in an impromptu manner, to discuss each of these discourses, taking up more especially the therapeutic uses of aconite, as he had learned them from the teachings of Dr. Roberts Bartholow, more than forty years ago, and as he had found them to be of service to him, in an experience of forty years, in general practice. These discussions led to his being invited to offer this paper at this time, a compliment which is duly appreciated.

As there are only a few doctors present today who heard Dr. MacNider's discourses, it becomes necessary to review, as briefly as possible, the outstanding and important facts in the physiological actions of these drugs, as found by him and others in their laboratory work.

There are three stages, or degrees of intensity of action, found in the experiments with each of these drugs. These degrees of action depend entirely upon the size of the dose given. The action is so nearly the same with both drugs that one description may serve for both, except that it must be remembered that veratrum viride is a very much more powerful agent than aconite, and that it is much more irritating to the mucous membranes of the alimentary canal, and more liable to cause nausea and vomiting.

The *first action* is that for which the ordinary medical dose of either drug is administered, and it is not pushed beyond that. With such doses, given at proper intervals, the heart's action is slowed, without the heart muscle being weakened; respiration is slowed; vascular tension is lowered; blood pressure is reduced; the action of the skin is increased; the flow of urine is increased; pain is relieved, and temperature is reduced. This is a perfectly safe action, which can be produced and maintained as long as desired, with proper doses given at proper intervals. Since we now have a standardized 10 per cent tincture of each of these drugs, the tincture is the preparation most commonly used. The average dose of each of the two drugs is about the same, being 1 to 10 minims for children, and 5 to 15 minims for adults. It should be liberally diluted with water when administered. The physiological action of either, when administered by mouth, will be obtained in from 20 to 40 minutes, unless there be some disorder of the stomach which would retard the action. Both drugs are quickly eliminated, the action lasting only three or four hours. Therefore, where sustained action is desired, it is necessary to repeat the dose about every three hours. The patient should be watched with reasonable care to see that the size of dose and interval between doses are adjusted to the requirements of the particular individual.

The *second action* is produced by too large doses, or by small doses repeated too often. This results in a toxic condition, in which the heart's action passes from slow to very fast, and sometimes irregular. There is a decided pallor, copious perspiration, and weakness of the patient.

The *third condition* is produced when still larger doses are taken. In this degree, the heart becomes very slow and very weak; the pulse almost indistinguishable. The body is cold, and covered with cold sweat. There is faintness, dimness of sight, great muscular weakness, and other grave symptoms. It is a stage that should never be reached in the medical use of the drug; but when reached, by accident or otherwise, it can be relieved by adrenalin, or such stimulants as spirits of ammonia.

Aconite is a reliable remedy that is reasonably free from all risk of danger. It is effective in such small doses that it can be easily disguised in a syrup or elixir. It readily combines in action with other remedies that the doctor often desires to use. Bear in mind the physiological action, and you will have the key to its uses.

In acute tonsillitis, pharyngitis, otitis, and acute catarrhal bronchitis, all of which, either in children or adults, are usually accompanied by fever, high arterial tension, fast pulse, dry skin, and more or less annoying cough, I have found tincture of aconite to be a most satisfactory remedy. It quickly brings under control all of the symptoms, and shortens the course of the disease. These several affections are the most common manifestations of influenza, of which we have seen so much in recent years. For these several ailments in children, I ordinarily prescribe 2 to 4 drops of tincture of aconite, in combination with 3 to 5 drops of sweet spirit of nitre—and if there be much cough, 3 to 5 drops of paregoric, given in simple syrup, every two or three hours, till the desired impression is made; then continued, as needed, to keep up the impression. If there are pronounced neuralgic or myalgic pains, it may be necessary to give a larger dose of camphorated tincture of opium, once or twice, till relief from pain is obtained, after which the combination can be relied upon to control all the symptoms. The same treatment serves equally well for adults. Larger doses must be given, and the patient required to keep to the house, or in bed, as the severity of the case may demand.

As it reduces respiratory movements, it is of especial benefit in all inflammatory conditions of the respiratory tract. In the early stages of both bronchial and lobar pneumonia you can get the best of results with this same combination, in controlling the symptoms of hypertension, fast pulse, high temperature, pain, quickened respiration, and cough. The spirit of nitre aids in promoting the action of the skin and kidneys, relieving congestion, and eliminating waste; the camphorated tincture of opium in allaying cough and relieving pain and congestion. The aconite quickly meets, and aids, in the control of, all the symptoms. It should be left out when the crisis in lobar pneumonia is approaching. In the treatment of acute

pleuritis, 5 to 10 drops of aconite, and 5 to 10 drops of deodorized tincture of opium, given every 3 or 4 hours, as required, are most effective in relieving symptoms up to the time of effusion. In fact, you will not find any more effective means of preventing effusion in these cases.

In the treatment of several hundred cases of scarlet fever, in an epidemic prior to the days of effective quarantine, the author found no other prescription that gave such universal satisfaction in controlling symptoms and preventing complications as did tincture of aconite and sweet spirit of nitre, given in 2 to 5 drops doses of each, every 3 or 4 hours. It should be started with the begining of the eruptive stage, and continued as required, during the fever stage. It promotes the action of the skin and kidneys, lowers the temperature, and relieves congestion, thus warding off nose, throat, ear, and kidney complications, which are so often followed by troublesome and dangerous sequelae. It is equally useful in the treatment of measles, smallpox, and other eruptive fevers, during the fever stage. In measles it is especially effective in warding off bronchopneumonia, and other complications.

Aconite is a most helpful remedy in cases of congestive dysmenorrhea, due to cold and like causes, in young girls. One night recently the author was called to see a young girl suffering with this trouble. Her symptoms were fast pulse, high arterial tension, temperature 103½, congested face, nervous twitchings of the muscles, severe headache, delirium, and eructations of enormous quantities of gas. The mother advised that the girl had previously had such attacks at the time of her menstrual periods, and that other doctors had failed to give anything that would relieve her. Fifteen drops of tincture of aconite and sixty drops of sweet spirit of nitre were given at once, well diluted with water. Twenty minutes later she was given a large dose of an intestinal antiseptic, for the purpose of arresting the fermentation that was causing the gas. One hour from time of taking the first dose the congestion of the face was gone, the pulse and temperature almost normal, the headache and delirium gone, the eructation of gas greatly relieved, and she was inclined to sleep. Treatment was directed to be continued in smaller doses every three hours, if needed; and she was left for the night in a very comfortable condition. The report next morning was so favorable that a second visit was not needed.

The author has used tincture of aconite in a few cases of high blood pressure with hypertrophy of the heart, without valvular lesions, but having chronic nephritis of the dry form. It is indicated when there are convulsions, or when the convulsive seizures are threatened, as manifested by high blood pressure, severe cephalalgia, congested face, and nervous twitchings of the muscles. The unfavorable symptoms are promptly relieved by liberal sized doses, and controlled while the treatment is continued, but the progress of the disease seems not to be affected beyond temporary relief.

You will note that very little has been said about the use of veratrum viride. This is not because of prejudice against this drug,

but because of lack of experience with it. In the beginning of my professional work aconite was chosen, because it was thought to be the safer remedy, and reasonably free from producing irritation of the stomach and nausea, which veratrum is liable to do, even in small doses. Having started in life with one of these drugs, a need for the other was never felt. Hence I am less familiar with it, and less inclined to recommend its use.

The chief uses of veratrum are in acute dynamic inflammations, where it acts as a powerful sedative to the circulatory system. In acute pneumonia, pleurisy, hepatitis, and other like conditions it is valuable during the stage of congestion and active inflammation. It should not be used in any case where there is general depression. It has been highly recommended in puerperal fever. It has been much lauded in puerperal eclampsia, and large doses, 30 to 60 drops, advised. In high blood pressure, with hypertrophy of the heart without valve lesions, it relieves the overaction and the most distressing symptoms. In acute mania, maniacal delirium, and other cases of acute cerebral congestion, it may be successfully used.

Both aconite and veratrum viride are contra-indicated in most cases of inflammatory conditions of the gastro-intestinal mucous membranes. They are also contra-indicated in all adynamic conditions.

Many other uses of these drugs will suggest themselves to you. The use of the other preparations, and other combinations, will suggest themselves. This paper is not intended to be exhaustive, but only suggestive. It is undertaken only in order to give you such part of my experience with these agents as may lead you to see the advantage that you may gain by the general use of one or the other of them in everyday practice, if you are not already using them.

DISCUSSION

Dr. Henry L. Cook, Chairman, Fayetteville: I had a case last Saturday of suppressed menstruation in which I used aconite. I had not the wonderful results Dr. Kent had, but did have good results. The condition was due to cold. I gave only five drops of tincture of aconite every two hours, and got relief in twelve hours.

I have used aconite in the early stages of suspected childhood diseases, and have gotten very good results. With veratrum viride I have had less experience, but have used it a little in what I call beginning eclampsia—very intense headache, high arterial tension, and rapid pulse. I recall one case in which I took the advice of another physician to give 20 drops of the tincture hypodermically every twenty minutes until I got results. Three such doses were given, and it worked finely.

Dr. Wm. deB. MacNider, Chapel Hill: I do not know when I have enjoyed a paper as much as I have Dr. Kent's. I did not know a man as youthful as our chairman is had sense enough to use a drug as old and as good as aconite and veratrum. There are several

things I got from Dr. Kent's paper, and one is that apparently he studies people's symptoms and tries to find something that will modify those symptoms until the pathology that causes the symptoms is arrested. I have pretty definite thoughts about the attitude of the medical profession towards sick people. We are eternally talking about the prevalence of quacks—osteopaths and chiropractors—and I should not be a bit surprised if the profession is not in some way responsible for the popularity of those folks. The average young doctor now is interested in diagnostic methods, in diagnosis, as I take for granted any physician is, and after they quit doing that they think there is nothing else to do except to talk about the autopsy findings. They may be extremely interesting to the physician, and I am sure they are helpful, but the patient is not primarily interested in that phase of the question. There is a pretty good adage, I think—"Be not the first by whom the new is tried, nor yet the last to lay the old aside." I think that is applicable in medicine. It is very easy to try something new, but it is wise to hold to what we know is good. These two drugs of which Dr. Kent has spoken were used by thoughtful people until the discovery of the coal tar remedies. Then the drug firms got busy and advertised them, the Germans got busy with them, and these two drugs were dropped. Then the idea became prevalent that they are extremely dangerous drugs. Any drug that is worth anything is dangerous. Digitalis can quite easily kill you, and so can strychnine, but we use them. Incidentally, I think that Dr. Kent's observations are just as scientific and just as valuable as if he had made them on a hundred dogs. You can do just as fine scientific work at the bedside in a hut if you have your top piece working as if you did it in a $100,000 laboratory.

It is true and not true that aconite and veratrum are dangerous. I am more familiar with veratrum than I am with aconite, and the few remarks I shall make will be on it. Dr. Kent has handled the aconite end.

If you give veratrum in small doses intravenously to animals, you have exactly what you have observed clinically— slow pulse and fall in blood pressure. At the same time you get dilatation of the splanchnic blood vessels and definite withdrawing of the blood from the other regions of the body, namely, the lungs and brain. It is a perfectly safe thing. It is not due to depression of the heart muscles at all, and it can be instantly relieved by giving atropin. The dilatation of the splanchnic vessels and leg vessels in particular I am not certain about. I think it is due to depression of the muscle tissue in that region, for it does occur after the constrictor nerves to those parts have been cut. That initial fall in blood pressure and initial slowing of the heart is a perfectly safe thing, eminently more safe than a similar slowing and a similar lowering of blood pressure from acetphenatidin and antipyrin. There are several theories that have been postulated, but I do not know that any of them will hold water as to the second stage. The third stage you do not want to

get any more than you want to produce convulsions in a person with strychnine. The second slowing occurs after the vagus mechanism is no longer operating, after it has been thrown out by atropin, therefore the second slowing is not a vagal slowing. It is a dangerous slowing, for it is due to depression of the heart muscle. So both points of view are correct. If you want to give veratrum in proper quantity and get the therapeutic effect you have a perfectly safe drug. If you want to give it thoughtlessly and carelessly, and kill somebody with it, you can do it, just as you can with strychnine or chloroform. The secondary slowing is a heart muscle thing, and that can not be relieved by epinephrin.

I wish that more of us would think about these drugs. I do not know anything about clinical states, but it does seem to me that there are certain conditions in which veratrum should be of definite value. The first thing I think of is the so-called cases of essential hypertension. We do not know what is the cause of that, but there is no use in waiting until the man blows the top of his head off with a cerebral hemorrhage because you do not know the cause of essential hypertension. The thing that interests the patient is getting his blood pressure lowered and preventing cerebral hemorrhage. It seems to me that if you can lower the blood pressure and take the blood away from the brain you have been of service to that man, and I take it that the primary function of a physician is to help someone who is sick.

In arteriosclerosis I do not think it is much good. I do not believe anyone is foolish enough to think that any drug or anything else will make fibrous tissue relax, or relax a calcified blood vessel. It is there and it is going to stay there. But we all know that the arteriosclerotic will do too much work, will get mad, and we have what the clinicians call a vascular spasm superimposed on the above condition. There again veratrum would be of value, and I am quite sure it would be of value in chronic nephritis.

You can get veratrum in a ten per cent standard tincture. Ten years ago any man would have said that digitalis is a worthless drug, and it may have been because it was not standardized. The same is true of veratrum today. I believe in veratrum and in aconite, when they are used judiciously, and that is the way any thoughtful physician uses any drug. I believe they are two drugs we have dropped without sufficient reason, and I believe they are drugs from which, in certain conditions, we can get definite results.

I certainly have enjoyed Dr. Kent's paper.

Dr. G. H. Macon, Warrenton: I should like to have Dr. Kent relate any case in which he has had beneficial results from veratrum viride in eclampsia.

Dr. Kent is a man who has had large experience in the practice of medicine, and experience is the best teacher, after all. Dr. Kent always says something worth while when he rises to speak, so I am certain we should all like to hear from him on this very important subject.

Dr. K. G. Averitt, Cedar Creek: So far as veratrum is concerned. I have no opinion, for I have not used it enough to have any experience of value. Aconite, I think, is a very valuable remedy in some diseases of children, especially respiratory diseases, and occasionally acute nephritis. I have never seen any danger from it. Of course, as Dr. MacNider says, any drug would be dangerous if used by a fool, but used with good judgment I think aconite is a very valuable remedy, and I think it is much superior, in many diseases, to any of the coal tar products, and a much safer drug. It has been my experience that it is a very much neglected drug, and that we might relieve some conditions with it very much better and more quickly than with other drugs.

Dr. John M. Manning, Durham: I rise not to criticise or discuss Dr. Kent's paper, because I approve everything he says or does, but I want to advise him and advise my friends here today to be careful about using opium, because the average Federal narcotic inspector knows more about the physiological effects of opium than this whole assemblage of doctors.

Dr. Rigdon O. Dees, Greensboro: There are so many men here who know more about veratrum and aconite than I, but I want to make this statement. I have used tincture of veratrum viride in postpartum eclampsia with very beautiful results, but it is wise to have a nurse or some one who can count the patient's pulse, and has some idea about the tone of the pulse, watch the patient. I always instruct them to give it every three hours until the pulse is eighty or eighty-five, and try to avoid that third stage, where the heart muscle becomes weak and there is cold, clammy sweat and great depression.

Dr. MacNider touched a point that is very fine. We examine the patient and make a beautiful diagnosis, but we are inclined to stop there and not give the patient the remedy for which he or she has come to us. I think we should devote more time and attention to therapeutics as well as diagnosis.

Dr. D. S. Currie, Parkton: I have used tincture of veratrum as a routine in eclampsia, antepartum and postpartum, and in all kinds of conditions, often in negro homes and other places, and have yet to see any bad results. The effect is always good. I do not mean, however, that every case of eclampsia is cured. I agree with Dr. Dees that it is wise to have a nurse, but it is impossible always to have one. I usually administer veratrum, and I have used Norwood's tincture, just because I got started with it some years ago. I give fifteen to twenty minims hypodermically every half hour until the pulse rate is reduced to sixty or sixty-five. Usually it will maintain that rate, the patient will relax, and there will be some perspiration—which I think is a pretty good indication for holding up when you get to that stage. Watch the patient for a while, and usually you will have no more convulsions. Go back after several hours, and you will find the patient with a pulse at about the same rate, 60 to 65, and usually feeling very comfortable.

Dr. J. G. Murphy, Wilmington: I want to take this opportunity to emphasize the points brought out by Dr. MacNider and one of the other speakers. The tendency of the teaching in materia medica and therapeutics in the present day seems not to round out the student in handling the drugs the action of which he is taught. I have spoken of this to Dr. MacNider. Every year since I have been on the Board of Medical Examiners I have asked the question, "Write prescriptions for the use of four or five drugs." The answer to that has been one of the poorest answers we get. I find the men very deficient in the actual using of those drugs, of which they are taught the physiological action. The men know the action of the drugs; they are taught that; but when they get right down to prescribing for the patient who enters their office the day after they open it, they do not know how to write the prescriptions.

Dr. MacNider: The boys who go from the University and who get their therapeutics and prescription-writing after they leave there just do not get any at all. They tell me about the only therapeutics they get is just the little dab at it that I give in pharmacology. I am not teaching therapeutics at all; I have nobody to teach it on. It seems to me after you study a drug you ought to have some peg to hang that information on—that is, a patient. I think perhaps we have gone too far in this country in not paying some attention to the symptoms which can be modified by drugs and the person benefited until we have time to employ our diagnostic tests, etc., and find out what the cause of the thing is and then, if possible, eradicate that. But there is a great big interval in there, from the time you see a sick person until you can eradicate the cause of the illness, where some drugs are of distinct value.

Dr. Kent, closing the discussion: I want to thank all who have so kindly and graciously taken part in this discussion. I think you have answered every question that has been directed to me, and answered them better than I could answer them. Consequently I shall answer only very briefly any of them.

Dr. Murphy, I do not like to criticise the colleges, and I certainly do not wish to criticise the young men whose faces are before me today, or the young men of the profession generally. They have chosen the instruments with which they choose to fight disease, just as I in the beginning chose those with which I fight disease and sickness and suffering. They may be getting from their remedies results equally as good as I got from aconite; I hope they are. But I feel that they are leaving out of their armamentarium one of the most valuable drugs, in aconite, and I should like to have them go back to it, study its physiological action, as taught by Dr. MacNider and others, as taught in the older text books and, I hope, taught fully as effectually in the later text books, although I have not had occasion to keep up with the later text books on therapeutic uses of drugs. I have taken Osler and read it, but Osler is not recent, and I have deplored the fact that as wise and great and capable a man as Osler said so little when he came to discussing the real treatment

of disease. I think it is a fatal defect in his books that he says so little about treatment. I love old Roberts Bartholow—I have found more help from him probably than any other. I am not sure the colleges are deficient in the teaching of the therapeutic uses of drugs. If they are falling down on any one point especially, I think it is in failing to impress upon the young men the value of drugs, so as to give them faith in drugs. There is, in my mind, positively too little faith in the things they use. A doctor will give a thing and not expect much from it, so he will not get much from it, because he has not used it intelligently. He does not get very satisfactory results because he does not expect satisfactory results. I think if he had faith he would put more gray matter into it, more of himself, more of his mind, and he would get better results. I wish to emphasize that drugs really are faithful, they are efficient, they will give you the action you desire if you use them intelligently; they will really do things. They require intelligence and knowledge, to be sure, though they will give you some results any way. You must study drugs and use them until you can use them as the surgeon uses his instruments—and with equal precision, too. We do not put our mind and thought and energy in the use of drugs probably as we should.

In the use of aconite, and veratrum viride especially, in eclampsia I have not had much experience. That, to my mind, is a very complex kind of thing to deal with. To my mind there are several factors in the production of eclampsia, and to know which remedy to use, of the enormous number of remedies that are lauded for this thing, we must have some knowledge of the several factors that enter into the production of it. Where it is due to congestion, high blood pressure, and to that peculiar condition which I do not know how to describe or exactly the cause of, but that I find occasionally in women, where they are just ready to explode, there is going to be an explosion and you can not find any real cause, I do not know any remedy that is more effective in relieving the symptoms and tiding you over than veratrum viride and morphin—and that is all you need, just to tide over until the woman is relieved and the hypertension is lowered. I do not know any remedy more effective. These cases need large doses, just as they require large doses of morphin. One-fourth grain does not seem to do any good; you have to give a half grain or more. So you have to give large doses of veratrum viride. I believe you will get more results from veratrum alone than from morphin alone, but you will get better results from both together.

HAS ALCOHOL A PLACE AS A THERAPEUTIC AGENT?

G. H. Macon, M. D., Warrenton

It appears that we are getting panicky in our denunciation of alcohol. As a result of this unrest no provisions have been made for that small percentage of patients to obtain alcohol legally for medicinal purposes. I admit that its use in the practice of medicine

is limited; but I am also convinced by experience and observation that in certain cases, wisely administered, I have yet to see a drug that I could safely substitute for it.

Recently I had occasion to observe the beneficial effects of alcohol in two desperate cases of lobar pneumonia. Both of these cases were addicted to the use of alcohol as a beverage. The delirium experienced by these patients towards the crisis was something fearful—simply wearing themselves out and practically exhausted. The various sedatives were used without giving the desired results; but the most gratifying results were obtained from moderately large doses of alcohol, and I am convinced that had I not used alcohol with these patients the termination would have been fatal. Good whiskey was hard to obtain. Opium in the form of morphin was tried, and the opiates produced a decided depressing effect upon the respiratory centers in both cases. Whiskey used on both patients gave splendid results.

In the infectious diseases, when the first sound of the heart becomes feeble, alcohol wisely administered has given me results that I have not been able to obtain from other drugs. In carbolic acid poisoning it is the most efficient antidote that we can use. It prevents the absorption and also dilutes the acid by its astringent and dehydrating action upon the tissues.

In severe types of gastro-enteric intoxication, where the prostration is severe, brandy in thirty-drop doses in a child six months old has given me splendid results, when other means of stimulation have failed. In a child suffering from bronchopneumonia, brandy in half-dram doses every two or three hours has given me the most happy results.

I have seen the most ardent prohibitionist's viewpoint as regards prohibition completely changed after observing the beneficial effects of alcohol in a relative. The attitude of the state in not placing alcohol or whiskey where it could be legitimately obtained has made a man who was once enthusiastic as regards prohibition now luke-warm towards the cause.

When we obtain alcohol illegally the bootlegger in his ignorance is only too glad to pass the word along that Mr. So-and-So is purchasing whiskey, therefore it must be all right to handle it. As a result, bootleggers and distillers increase instead of diminish.

It is not often that we really need alcohol in practice; but when it is indicated we should not be forced to obtain it illegally. I contend that the State should make provision whereby it can be procured, and the regulations as to dispensing it should be rigid and strictly enforced, and prohibition would be strengthened.

If alcohol is wisely administered to the elderly who are convalescing from some acute infectuous disease, the period of convalescence is shortened, their appetites are improved, and it is a great factor in placing them on their feet again.

Alcohol is clearly indicated in poisoning by the cardiac depressants, and is one of our most reliable agents in threatened heart failure.

I contend that alcohol is indicated only under certain conditions, and under these conditions which I have enumerated I have not found any agent that I could substitute with any degree of satisfaction.

No one wishes to see the saloons return; but I would like to be able to obtain alcohol when it is indicated in a decent, legal manner. Under the existing state laws this is impossible.

Therefore I ask the question: Has alcohol a place as a therapeutic agent?

DISCUSSION

Dr. A. A. Kent, Lenoir: It has been my fortune, or misfortune, to have been in several of the fights over the use of alcohol in medicine. I remember very distinctly when the medical profession of the state went upon record as opposed to the use of alcohol at all in medicine. That was at a meeting held in Raleigh, I do not remember just what year. I voted with the majority, to dispense with it in the practice of medicine, at the same time knowing as well as I know anything that alcohol as a stimulant does have a place in medicine. But, seeing that doctors from one end of the state to the other were abusing the privilege of writing prescriptions for alcohol, I felt that it should be taken away from them, that they were actually doing more harm with it than good, and that we could dispense with it, although it has a right place in medicine. I felt that it should be taken away from the druggists because they, too, were abusing the trust reposed in them. They were selling it where it was not being used as a medicine, but as a beverage. So I voted with the majority of my profession, and said we would dispense with it in the practice of medicine.

It was my misfortune to be a member of the legislature which succeeded that medical meeting in Raleigh. The legislature acted in response to the medical profession of North Carolina, and by law the right to handle alcohol on prescription was taken from the drug stores. Again I voted against alcohol, but I got up on my feet and explained my vote, saying that I believed that it had a place in medicine, and should be used in medicine, just as other drugs are used in medicine that are liable to abuse, and were being abused. But because of the abuse of it, I voted against it.

In the early years of my practice, I found it a most satisfactory and effective stimulant, particularly in pneumonia. It is not a good stimulant to be used in typhoid fever. I am satisfied that during the first ten years of my practice, I abused and did harm to my patients with typhoid fever by trying to stimulate them with whiskey and brandy. I am sure that I hurt these patients oftener than I helped them by relying upon alcohol as a stimulant, rather than using

some of the other stimulants, that do not irritate the stomach and interfere with digestion as does alcohol in typhoid fever.

If drug stores would handle alcoholic stimulants only in the right and proper way, and doctors would prescribe them only in the right and proper way, as a medicine and not as a beverage, they have a proper place in medicine. They should be prescribed and handled just as calomel, just as morphin, just as many other drugs that are liable to abuse are prescribed and kept in the drug stores.

Dr. L. D. Wharton, Smithfield: I, too, was at the meeting in Raleigh when the State Medical Society went on record against the use of whiskey. It was at that meeting, if I am not mistaken, when Dr. J. F. McKay, of Buies Creek, who sits at my right, read a most valuable paper on the use of alcohol in disease. I was there, but did not, like Dr. Kent, vote with the majority, although I am a Prohibitionist and voted for prohibition. That recalls the first meeting of the North Carolina Medical Society I ever attended—I think it was in 1884, in Goldsboro. Dr. Smith, of Goldsboro, read a paper on the use of alcohol.

(Dr. Kent: Pardon me—it was in 1895, and I read a paper on the abuse of alcohol.)

Then it was Dr. Smith who discussed your paper. He recounted at length his experience in the use of alcohol in diseases that man falls heir to, especially pneumonia, and closed his discussion, I very well remember, by saying: "I believe in the use of alcohol internally, externally, and eternally."

Dr. J. F. McKay, Buies Creek: The American Medical Association two or three years ago took a solemn referendum on this subject, and those opposed to the prescribing of alcohol in medicine were decidedly in the *minority*. I do not want this occasion to pass without saying that I read a paper on this very subject before the society at its meeting in Greensboro, in 1917. More thought and further observation have confirmed me in the views therein expressed. We should have some legal means of getting alcohol for our patients, when it is needed, but as long as the members of this society have not the courage to ask the legislature to grant the relief needed, the present condition will continue.

Dr. A. J. Crowell, Charlotte: As one who voted for the resolution and one who voted for prohibition, I wish to say that if I had opportunity to vote in the society or in the state to have alcohol placed back in the hands of the doctors and drug stores I should unhesitatingly vote for it. Most of my work is in dealing with old men. At that time I was dealing more with young men. Today I feel the need of having alcohol for my patients, I expect, about as much as any person who is practicing medicine in the state of North Carolina. Technically, I have secured and administered whiskey illegally to my patients. As a result I feel sure that it has not been long since I saved two who were in the hospital at the same time, being prepared for prostatectomy. Morphin is a thousand times more

dangerous and detrimental to the person, morally and physically, who gets in the habit of taking whiskey. You can take a man off whiskey, but you have an awful time getting him off morphin. It is a thousand times harder to take one off morphin than it is whiskey. Then why should lay people, congressmen, lawyers, ministers, legislators and laymen, who know nothing about medicine, tell us that we do not need whiskey in our practice? I saw an article in the Journal of the American Medical Association some time since lamenting the fact that lay people in Congress told us what we should use and what we needed to use in the practice of medicine. I see no reason why whiskey could not be controlled just as easily as morphin.

The druggist can keep his whiskey prescriptions and be required to give an account of quantity handled, just as they do morphin. It is no more trouble, and it is a drug badly needed in medicine in many instances.

Dr. D. S. Currie, Parkton: I think one of the strongest points that Dr. Macon made is the fact that we have to obtain whiskey illegally. I am a prohibitionist and an abstainer myself, though I may not look like it, but I think whiskey has a distinct place in medicine and if it could be arranged so that we could obtain it without abusing the privilege, I should be glad to see it. I would vote against its being put in the hands of the druggists. They are the ones who abused it, and not the doctors. They tried to make money on it, and we got the blame. If whiskey could be placed in some place from which it could be conscientiously procured, just as we get our diphtheria serum, and other things from the State, so that a doctor could get whiskey and prescribe it to his patients as needed, I think it has a place. I think, however, we should be very careful in ever putting it again in the hands of the drug stores.

Dr. Crowell: I think Dr. Currie's idea is a fine one. Put it in the hands of one druggist or of some reliable person appointed and heavily bonded. It should be sealed with the government's seal and so dispensed.

Dr. Macon, closing the discussion: I live near the Virginia line, and have no trouble at all in getting good rye whiskey. There seems to be no friction there at all. One can get it from the druggists. It does seem to me that the state could take a more liberal view of this important matter, and put whiskey where we could get it legitimately. It is the addicts who need it, when they contract lobar pneumonia. The law should be just as rigid as the narcotic law and should be strictly enforced, and by doing this the sick would not be deprived of alcholic stimulation when it is indicated.

A STUDY OF CHEMICAL HYDROCHLORIC ACID, ESPECIALLY AS TO ITS PHARMACOLOGICAL ACTION AND THERAPEUTIC USES

S. M. Bittinger, M. D., Sanatorium

This is a drug which I think has not received quite the interest and study it deserves in medicine, especially by the internist. Of course, due to its great use in the arts and in commercial chemistry it has been studied in great detail by both scientific and commercial chemists and its physical and chemical properties and actions have become well understood and correlated with the result that hydrochloric acid is one of our most important chemicals. It belongs with nitric and sulphuric acid, to that great group of acids known as mineral acids, and these three are by far the most important of the group. It is probably only superseded by sulphuric acid as being the most important of the group. You probably have heard the old saying which still holds true to the present day that civilization, especially the commercial civilization, of a country can be very well determined by the amount of sulphuric acid which is produced or used in the various industries of that country. Hence hydrochloric which acid ranks close behind sulphuric acid in importance is indeed a very useful chemical to be used both in the scientific and commercial laboratories and industries. We will also see that it has a very important, even though somewhat restricted, field in medicine and fills a place which cannot be taken so satisfactorily by any other, even though quite closely related drug.

Before taking up the pharmacological and therapeutic study of hydrochloric acid it would be best to study in brief the history of the drug and its preparation and also its physical and chemical properties as by a study of these two last subjects can we only arrive at a satisfactory understanding of the action and results obtained from the administration of the drug.

I believe that at the present time, due largely to the fact that the field of medicine has become so broad, we often do not have time or allow our time to be taken up by other studies probably more interesting, but often not as important, as the close study of the chemical properties and actions of the materials we use in treatment. Or putting it in another way, we do not familiarize ourselves with our drugs. In the olden days the "doctor of physic" was an experienced chemist as well as therapeutist. Today the trend is more along diagnostic than therapeutic line and probably a little too much so.

Hydrochloric acid has been used extensively since it was first prepared in large quantity and thus in sufficient amount for commercial use by Glauber in the seventeenth century. It is interesting to know that the method of production as used by this chemist was the same as is used at the present time, namely: the action of sulphuric acid on common salt. The acid occurs in nature only in two places. In the gaseous state it is present mixed with other gases

escaping from volcanoes and in the liquid state it exists in the gastric juice where it is present in concentration of about two-tenths per cent.

Let us take up briefly the physical and chemical properties. The acid, as above mentioned, belongs to the group of mineral acids. The properties are in general the same. The commercial acid is a clear, and in the pure form colorless, fuming or volatile liquid, forming, when exposed to the air, dense white fumes due to its union with the atmospheric moisture as the acid has a marked affinity for water, a fact which should be borne in mind when considering its pharmacological and therapeutic action. In weak solution it undergoes complete dissociation into positive and negative ions.

The gaseous acid is very irritative to the mucous membranes and it is irrespirable. Chemically it is made up of the elements hydrogen and the halogen chlorin united in the proportion of one atom of hydrogen to one of chlorin. The acid is a powerful corrosive, but its action is not so extensive as either that of sulphuric or nitric acid, however its toxicological action is greatly enhanced by the fact that it is very volatile and hence is quickly distributed into otherwise inaccessible places and thus its action is more widespread.

Not only is this acid very destructive to tissues, but it acts upon most of the metals, the notable exceptions being gold and platinum.

Passing now from the physical and chemical properties of this acid we will begin the consideration of the pharmacological action, touching first on the toxicology of the drug. When brought in contact with the living tissue it causes the most severe burn associated with great pain, unlike, in this respect, the action of phenol, which has a distinct local anesthetic action even though very corrosive. When swallowed the lips, tongue and buccal mucosa are first turned white, but later become brown and rotten. The burn is not so deep as would result from that of nitrate or sulphuric acid, being not corrosive as above mentioned. However, due to its volatility the fumes may cause marked inflammation and edema of the larynx followed by death from asphyxiation even though none of the acid itself entered the larynx. The pain in the mouth, throat and the abdomen is very severe and instantaneous, swallowing is exceedingly difficult, voice husky, spasmodic breathing, severe vomiting. These local symptoms are quickly followed by rapidly progressive general symptoms of shock with rapid feeble pulse, general weakness and finally death, the mind remaining clear to the end. If the patient recovers from the acute effect he may remain subject to stricture of the gullet with loss of function of stomach, thus dying of slow starvation. Or if the burn and resulting cicatrix be not so severe as to cause immediate obstruction this may progress slowly, causing more and more interference with swallowing, or cancerous degeneration may become engrafted at site of the old burn.

Death may follow the ingestion of a few drops provided the acid itself enters the larynx, or if quickly swallowed and transmitted to the stomach death may follow a fluid dram dose. In rare in-

stances the fatal outcome may occur in two to fifteen hours after the ingestion of the acid, though the usual duration of life is about twenty-four hours.

The treatment for poisoning by hydrochloric acid is the same as for all mineral acids. Calcined magnesia is the perfect chemical antidote. Others are prepared chalk, wall plaster, soapsuds or largely diluted alkali, also milk and albumin are given to help dilute and combine with the acid and also protect the mucous membranes as far as possible. Above all speed is the prime requisite if any good is expected to be accomplished. Passage of the stomach tube or other instrumentation is absolutely contraindicated as the tissues are already badly corroded and softened and the passage of instrument is very likely to cause more extensive fluffing and cicatricial formation or even perforation of the esophagus or stomach.

Let us take up the physiological study of this acid, a study of prime importance to us because in order to obtain the best results from the administration of this drug in therapeutic doses we must try to administer it as near as possible according to the physiological laws which govern its secretion by the gastric glands. The normal degree of concentration of hydrochloric acid in the gastric juice varies greatly from time to time, being least just before the meal and greatest from about one to one and a half hours after the ingestion of food and then gradually falling. Also there are many perfectly normal physiological processes that influence the degree of concentration, but in general it adheres rather strictly to this rule.

Hydrochloric acid is manufactured by the parietal gastric glands, being derived from the chloride of the blood plasma and this chloride is converted into hydrochloric acid by a process of probably hydrolysis or other dissociation, the method of which is unknown at the present time. After the acid is once secreted as such the normal epithelia is impenetrable by it, but when for some cause the vitality of the epithelium is destroyed as in anemia or after partial occlusion of the arteries the acid may penetrate the cell and cause digestion of the gastric wall. Hence the dangers of a prolonged hyperacidity due to whatever cause.

We will now take up the functions of hydrochloric acid and see how important it is in the gastro-intestinal economy. Let us divide its functions into those that are physiological and those that are biochemical, both of which are very important and necessary. The former are shown by the control of hydrochloric acid on the movements of the stomach and the opening and closing of the pyloric sphincter, and I should say here that the opening and closing of the sphincter is not, as was thought up to a short time ago, due so much to the influence of the acid, but rather to a neuromuscular mechanism as yet not completely understood. Also under the same division of function the acid after entering the duodenum influences markedly the secretion of bile and pancreatic juice.

Under the latter division of function we have first the assistance to the pepsin in the digestion of proteins. Pepsin will not act,

or only very slightly, when the acid is absent as in achylia and the optimum action is only obtained when the concentration of acid approaches the normal limits. Second, it brings about to a certain extent an inversion of the disaccharides. However, this is of no very great importance. Finally, but not least, it has a very distinct antiseptic action on the gastric contents. It is claimed that the chyme from a normal secreting stomach is usually sterile, there being only a few bacteria able to withstand the bactericidal action of the acid. The tubercle bacillus is one and the spores of those germs capable of producing them. However, more recent work has shown that while the tubercle bacillus is very resistant due to its fatty capsule nevertheless they are greatly diminished by their passage through the stomach and when the concentration of the acid falls below the normal then various bacteria and yeasts start their growth followed by evidence of fermentation and formation of irritating organic acids and gases.

This antiseptic action, I am sure, has not received the attention it deserves by most of us. When we administer the drug we do so with the thought in mind of its physiological action and the first two biochemical properties. This latter function however is very important and is more and more receiving the attention it deserves. Thus we see what an important agent hydrochloric acid is in digestion and that as long as the acid is secreted in proper concentration so will it carry on its functions to the benefit of the gastro-intestinal system directly and the body as a whole indirectly. When, however, from whatever cause the acid is put out in greater or less concentration than the normal why sooner or later we are going to have altered function or symptoms arising and may become very marked and have a deleterious and far-reaching effect.

In certain diseases both local and general the amount of acid is increased above the normal while in other diseases the opposite occurs, even to a complete lack of or an achylia. I shall not take up time in enumerating or discussing the diseases or conditions in which the hyper-acidity exists; they are familiar to all of you.

In taking up the condition in which the acid is diminished, or absent, let us divide them into local or those in which the lesion is in the stomach itself or neighboring viscera and general in which the low or absent hydrochloric acid is more a symptom of the general disease, sharing with the rest of the body the effect of the toxemia or asthenia, with resulting inhibition to a greater or less degree of the acid secretion.

Of the local condition the first and one of the most important is malignancy, especially when it is complicated by obstruction. Also in ulcer where obstruction is also present the gastric analysis may show a decline from a hyperacidity to a condition of achylia as the cicatricial stenosis slowly intervenes and especially when malignant degeneration becomes superimposed upon the ulcer bed. Also there is a low acidity in the so-called chronic gastro-intestinal catarrh and even in a localized chronic gastritis. In these conditions there is

more or less atrophy of the secreting glands together with the general atrophy of the gastric epithelial lining. This latter atrophy is often seen in the stomach of old alcholics and is often associated with the chronic catarrh seen in cases of visceroptosis. Also we see achylia or hypoacidity in certain functional diseases in which the lack of secretion seems to be due to a vasomotor disturbance and is usually associated with hypomotility, or I might say gastric inertia. There are other local diseases in which hydrochloric acid is diminished or absent, but these I believe are the most important and will serve to emphasize the direction in which the paper points.

In taking up the general and constitutional diseases associated with hypo or a secretion of hydrochloric acid we will find that they are many and some of them are exceedingly important. The most important are the acute and chronic infectious diseases as typhoid pneumonia and tuberculosis, the latter I wish to take up more in detail toward the end of this paper. In these conditions there is to a greater or less degree a catarrhal condition of the mucous membranes which affects the secreting glands also, and of course diminishes or abolishes their function. In the case of the acute infection this inhibition may be only temporary and recovery of function will follow the clearing up of the exciting cause. However, in the chronic diseases more or less permanent damage may be done to the secreting glands, often they being replaced by fibrous tissue following atrophy.

We often see a low acidity at least in the chronic gastro-intestinal catarrh which is more or less always present in the chronic cardio-renal diseases when decomposition of kidneys or heart, or both, set in. This is largely due to chronic passive indigestion of the mucosa associated with atrophy and finally fibrosis also of the glandular cell. Again we see this low or absent acidity in any chronic wasting disease as in cancer of other organs or parts of the body or in diabetes and some chronic nervous diseases.

In chronic secondary anemia there is more or less hyposecretion of the parietal glands due to lack of proper blood supply and often this may finally lead to actual atrophy with more or less permanent insufficient glandular secretion.

This hypoacidity is often seen in cases of sprue. Also recently there has been brought to my attention by an article gotten out by Dr. Claiborne T. Smith, one of the internists connected with the Park View Hospital at Rocky Mount, N. C., on the treatment of that severe anemia often resembling actual pernicious anemia which occasionally occurs during the puerperium, by the use of large doses of hydrochloric acid in association with the use of haematinics. In these cases very marked improvement and final cures were obtained, and the author seems to think that the hydrochloric acid was a very important factor. Also in that very interesting and very fatal disease known as pernicious anemia the secretion of hydrochloric acid is greatly diminished or absent. In fact, practically all cases of pernicious anemia show a complete achylia, either throughout or at

least during some stage of the disease. The achylia may antidote the onset of the classical symptoms and blood picture of Adisonian anemia by as much as five to ten years. Indeed the absence of hydrochloric acid in the gastric juice is of great value in the diagnosis of this interesting condition.

The symptoms of hypoacidity or achylia are in the main gastric in type, but often influenced, of course, by the primary disease which at times is somewhat confusing. One of the main symptoms is gas eructations with epigastric fullness and discomfort, often amounting to actual pain. However, the pain is not so localized as in ulcer and often being rather diffuse over upper abdomen. Frequently patient complains of heart palpitation, and nausea and vomiting are not uncommon with spitting up of food. The onset occurs at variable time after meals and worse with carbohydrates which readily undergo fermentation. Occasionally we have heartburn, but it is usually not so marked as with hyperacidity, also not so much discomfort or pain and not relieved so readily by alkali. Again the signs of organic disease are usually absent except in the case of cancer or other local disease of the abdomen which are associated with the low acidity. However it not uncommonly happens that the diagnosis of achylia or hypoacidity from some organic abdominal lesion is not at all easy and we will often have to go through all our diagnostic methods to arrive at the correct state of affairs. Of course we are greatly helped by the existence of the exciting disease, whatever it is.

Another symptom which I have not mentioned is a chronic, often intermittant and rather intractable diarrhea which, in our experience, is a very common symptom or result of the low or absent acidity. The occurrence of this diarrhea can be readily understood as resulting from the poor digestion associated with the lack of hydrochloric acid in the gastric juice and also the absence of proper bactericidal action. We have noticed this diarrhea especially in our work here and now do a routine fractional analysis on patients presenting this symptom, even when there are no gastric symptoms as such existing.

There is no doubt in my mind that there are a great many cases of achylia that go unrecognized and in fact often the symptoms are practically absent or so insignificant, or are overshadowed by the primary disease as in tuberculosis and other acute infectious diseases.

In taking up the treatment of achylia we can see that while in a sense hydrochloric acid has a rather restricted place in therapeutics, however it is of great value in the symptomatic and also curative treatment of many dissimilar diseases with gastro-intestinal manifestation.

In our work in the field of tuberculosis we are at once struck by the many gastro-intestinal symptoms that arise during the course of this disease, often when no demonstrable tuberculous gastro-intestinal lesion be present, for as you know while intestinal tuberculosis is common as a complication of the pulmonary lesion a tuber-

culous gastric lesion is very uncommon and in the few cases reported in literature it has been usually present, at least in some of them, in those cases which were lacking or only a slight amount of hydrochloric acid was present. However, symptomatic gastric symptoms are very common, in fact, one of the most common of all the manifestations of tuberculosis; and we have found from our routine practice over a number of years of doing a fractional gastric analysis on every patient complaining of symptoms pointing to the stomach and intestines that the great majority of those with at least moderately advanced or far advanced tuberculosis have a low hydrochloric acid concentration, often amounting to complete achylia. We also do a gastric analysis on all cases of chronic diarrhea. Of course, these analyses are done also for purpose of differential diagnosis from some local or general disease which is suspected.

We also have been aiding our diagnosis and treatment of pernicious anemia and other conditions which come to us for study. While our work is largely directed toward the field of tuberculosis, however many non-tuberculous conditions come to our Sanatorium both for differential diagnosis and as complicating affections and we must handle these cases also, even the non-tuberculous ones for a certain time. I feel that often failure of physicians to obtain proper results from the administration of hydrochloric acid is due to the fact that the case has not been studied thoroughly, both as to the existing cause and proper diagnosis and again to the degree of impairment of the gastric secretion. So often the dose of hydrochloric acid has been so small as to be inadequate. In order to obtain the best results the administration of the drug should approach as far as possible the physiological laws governing the secretion of hydrochloric acid. By the fractional gastric analysis we can best determine this.

Here at Sanatorium we use in our work the ordinary Rehfus tube and the ordinary test breakfast. Specimens are removed at fifteen minute intervals and titrated for the free hydrochloric acid. Usually we attempt to obtain from eight to ten specimens at a sitting if the condition of the patient warrants it. After the series of titrations are finished by means of a formula the deficiency of hydrochloric acid in each specimen is determined and then built up to the known proper hydrochloric acid concentration or as near as can be determined. The patient is then given the thus obtained approximate proper dosage at regular fifteen minute intervals after each meal. In some of these cases, especially when the hydrochloric acid is entirely absent, the total amount of acid given is enormous. By this method we have obtained much better results than when giving the acid by the usual hit and miss method, even though the latter is beneficial at times and of course easier to carry out, and does not cause so much strain to the patient which of course has to be considered. However, I do believe that part of the good results obtained by this method is not due so much to the way in which it is given, but more to the fact we can so well determine the degree of deficiency and thus bolster it by the proper dosage.

The disease in which we have had most experience in treating the hydrochloric acid deficiency symptoms is tuberculosis and we have recently been using the drug more extensively possibly than ever before, being stimulated to this by some recent work in which the bactericidal action of gastric hydrochloric acid has been emphasized and the theory advanced that by the use of the drug in hypoacidity the so fatal complication of tuberculous enteritis might at least be partially prevented or the incidence lessened, not only from the direct action of the acid on the tubercle bacillus, but more on other fermentative organisms toward which it is a very active germicide, thus preventing or diminishing irritative fermentative processes which cause irritation to the intestinal mucous membranes and thus pave the way for lodgement and invasion of the intestinal mucosa. Even in cases of actual tuberculous enteritis in which the outcome is usually unfavorable the distressing symptoms are often ameliorated at least. In fact we have had cases which exhibited very suspicious symptoms of tuberculous enteritis which had on analysis a low hydrochloric acid concentration and by administration of the drug the symptoms of enteritis would clear up.

In cases of simple symptomatic indigestion with anorexia the appetite improves rapidly very often and the symptoms clear up, which is of great benefit to the tuberculous patient as those who have a good digestive apparatus improve faster than does the patient whose digestion is poor. We often combine a bitter tonic or an alkali before meals with the acid, after meals occasionally giving the acid and pepsin together because there is every reason to believe that if the parietal glands are incompetent also the peptic glands may be so.

There is another class of cases and these are those with chronic diarrhea, as above mentioned, which show no organic intestinal lesion as such and no parasites or causative agents can be demonstrated in the stool. On gastric analysis there is often found a hypoacidity or complete achylia. These cases may be called achylic diarrhea. By the use of the hydrochloric acid the distressing diarrhea often clears up or certainly improves to a great extent.

In pernicious anemia and in the severe secondary anemias, both due to the infectious diseases and following the puerperium as mentioned above, or of cancer, sometimes great benefit is obtained and in those in which the cause can be determined and removed the hydrochloric acid medication is of distinct aid in restoring patients to complete recovery. It is a well known fact that often the shortest way to good health is by way of the stomach, which is a much truer saying than we sometimes realize. It is of great value in the acute infectious diseases and is not used nearly so much as it deserves. While in most cases as you will note hydrochloric acid is not a curative drug as is quinine in malaria or arsenic and mercury in lues, however it is specific in those gastric symptoms due to the lack of the proper hydrochloric acid concentration of the gastric juice. Resulting from whatever cause, either local or general, no other acid

as nitric or sulphuric or any vegetable acid will take the place of hydrochloric acid in the gastric juice.

In concluding, I wish to emphasize the fact that hydrochloric acid deserves a higher rating and more extensive use in the treatment of disease. Its advance to the front will be more rapid as we learn more and more concerning the best way to administer it, the proper dosage and understand better its pharmocology and therapeutic action.

SOME UNDERLYING PRINCIPLES IN ENDOCRINOLOGY*

A. S. Oliver, M. D., Benson

The subject of the paper which I have been asked to present to you is at the present stage of its development; extremely difficult of discussion. The possibilities are perhaps unbounded; already the demonstrated facts concerning their action force us to modify our conceptions of the fundamentals of development, nutrition and metabolism, reproduction, etc. It has decided a wider, more voluminous discussion than any subject since Pasteur demonstrated bacteria as the cause of infectious diseases. With all, there is so little of fact and so much of fancy, so poor a correlation of generally accepted facts, so much contradictory evidence, experimental and laboratory, as well as clinical. The subject lends itself too readily to romance and to study it superficially is to be carried away with it.

I shall discuss the subject broadly and in generalities, so that it may seem rather a hopeless conglomeration. However, I shall confine myself to facts or probable fact.

If we are to make use of endocrine therapy we must have an intelligent appreciation of the principles which underly it. That is, as Lewellys F. Barker, who perhaps knows as much of these things as any man in America, has expressed it "We should plan our treatments as far as possible in accord with principles or laws that we believe to be well established, or that seem likely to become so. There prevails a widespread feeling that many practitioners of medicine are making use of endocrine products in therapy in an indiscriminate and haphazard way, taking no trouble to ask themselves in a given case why the administration of such products may be indicated, but administering glandular substances or derivatives and especially mixed products in various abnormal states merely because advertising matter strongly recommends their trial."

Let us consider briefly the general causes of endocrine disturbances: (1) Nutritional. Acting through their effect on the sympathetic nervous system and their hormones, the endocrines affect digestion. Conversely undernourishment or lack of vitamins disturb the glands, or both. A vicious circle is possible. The thyroid secretions stimulate digestive secretions. The pituitary the muscles of the stomach and intestines. Secondarily, metabolic processes are disturbed. Nutritional deficiency causes an hypertrophy of adrenals

*Read by title.

and pituitary and atrophy of the thyroid. (2) Infections. Either by their toxins or bacterial action. Focal infections especially affect the thyroid. I recently had a well marked case of hyperthyroidism with goitre, rapid pulse, nervous disturbances and rapid pulse, insomnia, restlessness, diarrhea and flushed skin which recovered readily upon removal of pussy tonsils. Three cases of hypothyroidism developed acutely among my patients during a single influenza epidemic. Certain infectious diseases seem to influence the pituitary and adrenals, the former having affect on subsequent growth, as after thypoid: the latter the asthenia accompanying and consequent to the infection. (3) Nervous disturbances, such as anxiety, fright, etc., apparently over stimulate the thyroid acting through the sympathetic. (4) Heredity. There seems little doubt but that endocrine disturbances may be handed down from parent to child, cretins having mothers with thyroid deficiency or other gland disturbances. Often two or more members of the same family suffer with the same disturbances and at others there may be several members of the same family with various different glandular discrasias. Mott found evidence of an inborn germinal defect in testes and ovaries, and it seems possible that our lives may largely be determined by the character of the glands which we brought into the world with us. (5) Influence of one gland on others. It is highly probable that one gland becoming deranged functionally will disturb the action of others, acting directly or in groups. Some observers claim that one gland of a group is dependent on the other members for its action. Certainly all the glands of internal secretion are obliterated by the long continued absence of thyroid action. Thyroid Gland. Function: The essential known function of the thyroid is the elaboration and delivery to the blood of a secretion containing the active agent, Thyroxin. Thyroxin is active in all or nearly all of the cells of the body. Thyroxin is a catalytic agent, hastening the rate of formation of a quantum of potential energy available for transformation on excitation of the cells. Physiologically therefore, it controls the energy rate of the organism or the speed of function, such as speed of corebration, of carbohydrate metabolism and of practically all somatic functions. It has been demonstrated (Roger) to be the great sensitizer of the autonomic nervous system which in turn is an important factor in determining visceral function. It also controls the iodin concentration of the blood, and probably has a great deal to do with immunity. The body contains on an average 14 mg. of thyroxin normally. (Chemically it controls protein metabolism.)

Hyperthyroidism: Mentioned to call your attention: (1) To the difficulty of diagnosing the milder degrees, especially of differentiating from early tuberculosis. (2) The possibility of preventing this disfunction by the administration of small doses of iodin or iodides to children for two weeks, twice a year. (3) To remind you that admenoma with increased heat production and metabolic rate is due to an excess in normal thyroxin. That in hyperthyroidism

with exophthalmos the increased heat production—metabolic rate to an excess of thyroxin which is in some way, as suggested by Kendall, probably slightly altered in its molecular structure. And that neurotic individuals with symptoms simulating hyperthyroidism do not have increased metabolic rate.

Hypothyroidism: The most frequent of all endocrine disturbances, ranging in severity from the markedly severe cretinism and myxedema to the very mild, frequently overlooked types. Symptoms vary accordingly and are all explainable by the decreased metabolic rate, and mild underacting autonomic nervous system.

Mild: Skin dry, harsh, scaly, beginning on forehead and forearms, hair falls, eye brows fall out especially in outer thirds, nails brittle, sometimes striated, maybe local fatty deposits, especially above the clavicles, or general obesity. Pulse slowed, mental processes slowed, patient sluggish and drowsy, slow in all movements. Reflexes diminished, pupils sluggish and there is hypetenia and diffuse pain. Subjectively, patient feels cold much more readily than normally, there is loss of energy, ambition, and ability to concentrate, fatigability, and constipation which is relieved by thyroid substance but not with purgatives.

Sturgis stresses the apparent difficulty among medical men of differentiating myxedema and chronic Brights, and says there is no excuse for this if one has in mind the possibility of Myxedema. It is also well to bear in mind the similarity in advanced cases to beginning tabes (sluggish pupils, diminished reflexes, diffuse pain).

Parathyroids: Function, the regulation of calcium metabolism and possibly stimulate general cellular nutrition. They are also important in maintaining the acid base equilibrium of the body, and probably control the chemistry for nervous activity and maintain tone of the nervous system. Upon their removal a characteristic tetany develops, following an alkalinosis, trophic changes, nutritional disturbances. This tetany is relieved by either the administration of calcium, or of hydrochloric acid, and is said to be due to intestinal toxaemia subsequent to loss of the detoxicating properties of the parathyroid action.

There are those who at present limit hypothyroidism to these cases developing tetany, while others (Janney and others) would include all cases with calcium blood deficiency (Grove and Vines), including chronic toxemias, ulcerative processes, focal infections, cases of chronic arthritis and even tuberculosis.

Pituitary: Promotes growth and development, an important factor in controlling genital development, probably initiates various rythmic functions and is probably therefore important factor in such rythmic functions as menstruation. Chemically there is evidence that it is probable controller of phospherous metabolism, and is therefore important in the physiology and development of organs where phospherous metabolism is an essential, bony growth and cerebal development and physiology. It has also to do with the

storage of sugar and its metabolism and possibly with salt metabolism.

Hyperpituitrism produces gigantism in adolescence and acromegaly in adult life and is probably due in most instances to tumor of the hypophysis or adjacent thereto.

Hypopituitrism most characteristic symptom is headache, with an irregular periodicity except in females at or just before menstruation. The pain is usually in temporal or supraorbital region but may begin in occipital region and extend anteriorly to the forehead. It is increased on stooping or lifting, usually accompanied by dizziness and pathological drowsiness is characteristic. There may be irritability, suspiciousness, nocturnal insomnia and visual disturbances. It is made worse by anything which involves pituitary activity, as ingestion of carbohydrates and menstruation. Pituitary markings are usually evident, Freleich or acromegalic types, with changes in secondary sex characteristics, as amenerrhea, sterility, dysmenorrhea in females and impotence in males. Blumgarten believes this the most frequent functional glandular disturbances met with in practice.

Genital Organs: Hormones from ovary and testes give character and individuality to function and play an important part with pituitary in determining the secondary sex characteristic, i. e., characteristic in function that are distinctly masculine or feminine, such as initiative, domination of reasoning power, or of emotions in the psyche.

Ovarian Hormone: Determines the development of feminine secondary sex characteristics and psyche and somatic pecularities—mamma skeleton, fat and hair distribution, etc. That the changes incident to puberty, i. e., the development of the mammae, uterus, ovaries and the physiologic appearance of menstruation are due to the action of the harmone elaborated by the growing ovarian follicle has been conclusively proven experimentally. What part of the ovary elaborates this hormone is much disputed. Frank and others claim to have proven experimentally that the lipoid extract of the follicle, corpeus luteum and of the placenta either alone will cause these puberty changes in animals, and deny that there is any function or hormonal act on in the intestitial tissue.

Hyperactivity (excess follicle secretion) produces premature sex development before puberty, precocious sex development and activity after puberty.

Hyperactivity (Deficiency in follicle secretion) produces fetalism and infantalism in adolescence, a failure at development of the secondary sex characteristics. You are familiar with the symptoms incident to the menopause and due to ovarian insufficiency in adult life whether artificial and premature or natural.

Adrenals: There is so much speculation as regards these glands that we shall confine ourselves to a statement of their believed function. They probably control somatic changes incident to emotion, instituting physiologic changes necessary for combat and for emergency response. They are also the supposed synsetizers for the sym-

pathetic nervous system. Chemically, they probably liberate sugar from the liver for catobilism.

In passing, Rowntree reported a series of cases in the Journal of Pharmacology and Experimental Medicine, March 1924. Of Addisons disease, nine of whom were treated with the full Muirhead regeime (adrenalin hyped, and by rectum t. i. d. and large doses of the whole gland by mouth. All of these not so treated are dead while six of nine so treated are living after twelve months, and three after sixteen months.

Thymus: That the thymus gland is a gland of internal secretion has not been established. Various investigators so place it and cite experimental evidence of some weight. But none so far is conclusive. Neither is the true function definitely established. The weight of experimental evidence is in favor of the theory that it functions as a lymphoid organ in infancy and childhood when large numbers of lymphoid cells and leucocytes are needed to combat infection. That the blood during this period contains large numbers of leucocytes and especially lymphocytes would indicate that these cells are of peculiar importance. Hoskin holds this view, and Dustin after reviewing all the literature, is forced to the conclusion that it functions as the center of nuclein metabolism acting as a reserve for nucleins which are liberated by harmones from other organs, as liver and pancreas.

Be that as it may, I want to call your attention to the relative frequency of two usually overlooked conditions. Enlargement of the thymus and so called lymphatism or Status Lymphaticus.

Where careful search has been made by competent observers there has been found around 8 per cent plus, of the former in infants (Benjamin among others). Autopsies at Bellevue Hospital have shown the same relative number of status lymphaticus.

Enlargement of the Thymus. The child may come to sudden death with but few preleminary symptoms, but in many instances a number of attacks of respiratory difficulty occurs; the cause of which may not at first be recognized. These consist of laryngeal spasm or breath holding, crying spells followed by breath holding, spasms of larynx with weakness or unconsciousness following the attack and the convulsive type. True thymic asthma occurs in infants and children, and this wheezing with bronchial irritation and at times fever is misleading. X-ray treatment is probably curative if continued till shadow disappears.

Lymphatism is a hyperplasia of all lymphoid tissues and thymus with hypoplasia of the cardio-vascular system and pecularities in configuration. There is grave liability to sudden death due to:

1st: Anaphylaxis from necrosis of lymphoid tissue and sensitization, further necrosis resulting in death.

2nd: Rupture of hypoplastic arteries, so that fatal cerebral hemorrhage may result from slight injury.

Symptoms: Males.—Slender body of feminine type, rounded arms and thighs, scanty growth of hair on face especially on lip and chin, feminine distribution of pubic hair, soft delicate skin, en-

largement of the cervical and axillary glands and poor development genitalia. Females.—Slender thorax and extremities, scanty pubic and axillary hair, soft delicate skin, hypoplasia of the genitalia.

In both there is increased susceptibility and decreased resistance to disease, and in females increased danger at childbirth. Both are unstable and form an undue proportion of drug addicts and suicides.

Basic Principles for all treatment:

(1) The principle of substitution in endoctrine deficiency.
   (a) Organ transplantation.
   (b) Use of fresh or dried glandular substances derived from animals.
   (c) Employment of the supposed active principle of the gland in question, which has been derived from the glands of animals.

(2) The principle of mild stimulation in endocrine deficiency.

It is established with a considerable probability of permanence that the normal activity of secreting organs throughout the bed depends upon stimuli derived in part from the chemical constituents of the blood and lymph, in part from the automic nerves. Upon this assumption attempts have been made to overcome endocrine deficiency by mild stimulation of these more or less crippled endocrin organs by such irritants as mild doses of x-ray or of radium eminations. The principle would seem to be a sound one, even though it should turn out to be of limited application.

(3) The principle of organ reduction or of function reduction in endocrine hyperacivity.

Sometimes the reduction of the actual size of an organ is undertaken by surgery, either by resorting to partial removal or inducing necrosis through cauterization, electrolysis, intensive radiation or the injection of hot water. This form of treatment has been successfully used in treatment of exophthalmic goitre and in ovarian hyperfunction, where an artificial menopause has been produced in severe cases of menorrhagia or puerperal osteomalacia.

(4) The principle of using harmones for treatment of conditions not necessarily depenedent upon derangement of endocrine function.

Insulin in the treatment of Diabetes is an example. In conclusion it must be obvious that this discussion has, of necessity, been superficial. Its object has been to bring to your attention the necessity for an understanding of the physiology of the ductless glands, of a definite diagnosis of the glandular disturbances with which you are dealing, in a given case, before beginning organotherapy, of avoiding polyglandular therapy on the whole, especially until our knowledge of the subject has advanced, and of seeking the underlying cause of the disturbance by careful physical and psychiatric examination and where possible remove the cause, as focal infection, nutritional imbalance, anxiety and other nervous strain.

In other words, it is a recitation of some of the basic principles upon which your study of the endocrine glandular system must rest if you are to gain an intelligent working clinical knowledge of the subject.

CAMPHOR IN PNEUMONIA AND OTHER DISEASES*

D. S. Currie, M. D., Parkton

There are some drugs, notwithstanding the tendency toward serum therapy, vaccines, and glandular extracts, etc., which will not stay put on the shelf, and which, as disease conditions and physiological action are better understood, come into greater usefulness in the treatment of various conditions.

Such is the case with camphor, the subject of this paper. In order that I may more clearly present the usefulness of this old drug, I think it best to refresh our minds on the kind of drug it is, and its physiological action.

Camphor is classified as an antispasmodic. We are concerned more particularly with its action on the circulatory system, nervous system, and the respiratory system. On the circulation, it acts as a stimulant, increasing the force of the heart and increasing or elevating blood pressure. Camphor acts directly upon the cellular structure of the inhibitory areas, and thereby invigorates them. It exerts a calmative influence upon certain nerve centers, allaying nervous excitement and muscular spasm. It is a respiratory stimulant and a stimulant expectorant. Camphor is eliminated by the intestinal tract, kidneys, lungs, skin, and mucous membranes generally, stimulating the glands in these structures.

In pneumonia it has been my custom for some years to give from five to ten grains in sterile oil, with a small amount of ether added to make it more soluble and more readily taken up by the circulation every three to four hours, hypodermically. Camphor is a powerful excitant of the central nervous system, and its therapeutic significance depends upon its power of stimulating vasomotor and respiratory centers, both of which, in severe cases of pneumonia, need to be constantly watched, and stimulated with such dependable stimulant.

Moreover, the action of camphor on the heart muscle itself has been proven directly on the frog's heart. If this has been arrested by means of muscarin, camphor applied in almost any form is capable of bringing back active pulsations. A heart arrested by chloral hydrate will frequently be made to contract again. In rabbits in which the blood pressure had sunk as low as 20 to 30 mm. a rise to 60 to 65 mm. could be produced by camphor (Bohme).

A considerable amount of camphor is excreted by the kidneys, thus stimulating them to greater activity, which in itself is no mean result, ridding the system of accumulating poisons and giving relief to the already over-intoxicated patient.

*Read by title.

It has been suggested in the past few years, by the advocates of camphor in the treatment of pneumonia, that this substance has a direct action on the pneumocci. Boehnoke recently investigated this alleged action experimentally and found that he was able to protect animals against a fatal dose of pneumococci by treating them previously with varying doses of camphor in oil. He was able by means of large prophylactic doses to protect animals against surely fatal doses, even when given intravenously. However, I do not think camphor can be depended upon as a specific against the pneumococci, as its action in all probability is too slight to make this claim for it, and I should not administer it with any such hope, but the fact remains that camphor is eliminated very largely by the lungs by the bronchial mucous membrane, acting at least as a stimulant expectorant.

Its action on the heart and circulatory system is its most valuable and dependable quality, and renders it a real friend when that organ is pounding and laboring under an ever-increasing load as the days of the pneumonic patient slowly approach the much hoped for and sometimes the long delayed crisis. The time to begin its administration is much like that of digitalis; in fact, the two combined to my mind make a most excellent form of protection for the patient, and it is my custom to give them in each case as indicated. Usually after the first 24 to 48 hours the patient begins to need some form of support, and I usually begin with very small doses of camphor in oil, maybe once or twice daily, and as the disease progresses I also progress my stimulation.

I believe in camphor, as in digitalis, the drug is often given in much too small a dose to expect or to produce results which are beneficial to the patient. A good nurse with whom one has worked can soon see the expected effect and govern the dosage and time of administration accordingly.

In my judgment, the general appearance of the patient is a much more dependable indication when to increase, diminish, or for that matter begin dosage at all, than any one symptom or any number of days or hours.

A patient whose heart is beginning to show signs of fatigue and is becoming asthenic, the pulse ever on the increase in number of beats per minute, getting somewhat smaller in volume, with an occasional miss or once in a while a reduplication of the beat, with the average around 120 to 140; the face beginning to look pinched, and the red flush of a day or so back giving place to a beginning cyanosis, maybe ever so slight; fearful, anxious expression; respiration on the increase, with beginning signs of failure of elimination of CO_2; breath hunger, and labored breathing; the tongue a little dry and beginning to be slightly brown; blood pressure falling below the pulse rate per minute; a little gas beginning to distend the abdomen, in this condition I do not think there is any stimulant more dependable and more productive of good results than a hypodermic of ten grains of camphor in sterile oil, with a little ether added to

make it more soluble and more readily taken up, given every one and a half to three hours, according to the need of the patient, until the condition begins to clear up.

I admit that in the above condition I always feel a little better if I am at the same time getting the physiological effect of digitalis. I do not give camphor in any other form nor do I administer it by mouth. Another suggestion, I think it better to make your own camphor oil. I do this, as I can get a larger dose than is put up in the usual ampule. I always add a small amount of ether.

WOMAN'S AUXILIARY

TO THE

Medical Society of the State of North Carolina

OFFICERS FOR 1926

President.....Mrs. J. Howell Way, Waynesville
President-Elect.....Mrs. R. S. McGeachy, Kinston
First Vice-President.....Mrs. J. W. Long, Greensboro
Second Vice-President.....Mrs. W. C. Mudgett, Southern Pines
Third Vice-President.....Mrs. R. E. Brooks, Burlington
Treasurer.....Mrs. W. L. Jackson, High Point
Recording Secretary.....Mrs. P. P. McCain, Sanatorium
Corresponding Secretary.....Mrs. Wm. J. Hunnicutt, Asheville

The third annual meeting of the Woman's Auxiliary to the Medical Society of the State of North Carolina was held in the west lobby of the Carolina Hotel, Pinehurst, Wednesday morning, April 29, 1925, with Mrs. R. S. McGeachy, Kinston, First Vice-President, presiding. The meeting was opened with the Lord's Prayer, after which Mrs. Chas. T. Grier, of Carthage, in a most cordial manner welcomed the ladies to the Sandhills. Mrs. T. C. Johnson, of Lumberton, responded, saying that the ladies present should gain enthusiasm from the Pinehurst atmosphere and should go away determined to make the Auxiliary amount to more in the future. Mrs. Picquet, of Pinehurst, then gave two beautiful vocal selections.

Mrs. McGeachy at this point asked the new members to come forward and register, and for all, both old and new members, to pay the yearly dues of ten cents to the treasurer.

Mrs. McGeachy then introduced Mrs. W. N. Hutt, of Southern Pines, who spoke very forcibly on "The Woman of '39." Mrs. J. Allison Hodges, of Richmond, who was to have followed Mrs. Hutt on the program, was unable to be present on account of Dr. Hodges' illness. Miss Theresa Dansdill, Director of Health Education of the State Tuberculosis Association, then gave a very interesting talk on child health, after which Mrs. R. N. Page led the Auxiliary in prayer.

Under old business it was moved and carried that the collecting and spending of the $1.00 dues decided on at the previous meeting should be left to the district councilors.

The treasurer reported that she had sent our quota of $5.00 to the Auxiliary of the A. M. A., and that she had $3.25 in the treasury. Mrs. C. M. Strong, Charlotte, and Mrs. Guy E. Dixon, Hendersonville, were elected delegates to the Auxiliary to the A. M. A.

It was moved and carried that a telegram be sent Mrs. I. W. Faison, the President, who was detained at home because of illness.

It was also decided to write a letter to Mrs. J. Howell Way, who was kept at home on account of her daughter's illness.

Mrs. J. G. Myers, Charlotte, moved that a vote of thanks be extended the entertainment committee, of which Mrs. W. C. Mudgett was chairman.

Mrs. H. E. Bowman, Aberdeen, then gave the nominating committee's report, which report was unanimously accepted.

As there was no further business, the meeting adjourned.

LIST OF CHARTER MEMBERS

Ashby, Mrs. E. C.—Mount Airy
Ashworth, Mrs. B. L.—Marion
Blair, Mrs. A. McNiel—Southern Pines
Bulla, Mrs. A. C.—Raleigh
Bullock, Mrs. Jack H.—Oxford

Carter, Mrs. Paul C.—Weldon
Choate, Mrs. B. O.—Sparta
Choate, Mrs. G. W.—Salisbury
Compton, Mrs. B. S.—Oteen
Craven, Mrs. T. C.—Ramseur

Dixon, Mrs. H. Carlyle—Madison

Faison, Mrs. I. W.—Charlotte

Gold, Mrs. Charles F.—Ellenboro

Harden, Mrs. Graham—Burlington
Hocutt, Mrs. Battle A.—Clayton
Holt, Mrs. W. P.—Duke

Jackson, Mrs. W. L.—High Point
Johnson, Mrs. T. C.—Lumberton

Keiger, Mrs. James A.—Greensboro
Kendricks, Mrs. R. C.—Elizabeth City
Kent, Mrs. A. A.—Lenoir

Lawrence, Mrs. B. J.—Raleigh
Linney, Mrs. R. Z.—Charlotte
Linville, Mrs. A. Y.—Winston-Salem
Long, Mrs. E. F.—Raleigh
Long, Mrs. John W.—Greensboro

McBrayer, Mrs. R.—Shelby
McCain, Mrs. P. P.—Sanatorium
MacConnell, Mrs. John W.—Davidson
McGeachy, Mrs. Hettie W.—Kinston
McGoughan, Mrs. J. V.—Fayetteville
McNairy, Mrs. C. Banks—Kinston
McPhaul, Mrs. W. A.—Charlotte

MacRae, Mrs. John D.—Asheville

Milliken, Mrs. J. S.—Southern Pines
Mitchell, Mrs. R. C.—Raleigh
Moore, Mrs. Charles E.—Greensboro
Moore, Mrs. K. C.—Wilson
Murphy, Mrs. J. Gerald—Wilmington
Myers, Mrs. John Q.—Charlotte

Nisbet, Mrs. D. Heath—Charlotte

Ray, Mrs. John B.—Leaksville
Red, Mrs. S. C.—Houston, Texas
Redwine, Miss Edith—Asheville
Russell, Mrs. Charles R.—Granite Falls

Sevier, Mrs. D. E.—Asheville
Sevier, Mrs. J. T.—Asheville
Sloan, Mrs. H. L.—Charlotte
Starr, Mrs. H. F.—Greensboro
Strong, Mrs. C. M.—Charlotte

Watkins, Mrs. Geo. T., Jr.—Durham
Way, Mrs. J. Howell—Waynesville
Worthington, Mrs. Frank D.—Charlotte

ROSTER OF MEMBERS

Adams, Mrs. M. R.....Statesville
Ashworth, Mrs. W. C.....Greensboro

Ball, Mrs. M. W.....Newport
Bass, Mrs. H. H.....Henderson
Beam, Mrs. R. S.....Lumberton
Bittinger, Mrs. S. M.....Sanatorium
Bonner, Mrs. O. B.....High Point
Bowman, Mrs. E. L.....McDonald
Bowman, Mrs. H. E.....Aberdeen
Brockmann, Mrs. H. L.....High Point
Brooks, Mrs. R. E.....Burlington
Broughton, Mrs. N. B., Jr.....Raleigh

Campbell, Mrs. A. C.....Raleigh
Cook, Mrs. H. L.....Fayetteville
Cozart, Mrs. W. S.....Fuquay Springs

Dickie, Mrs. J. W.....Southern Pines
Dixon, Mrs. Guy E.....Hendersonville

Ellington, Mrs. A. J.....Burlington

Fearing, Mrs. Isaiah.....Elizabeth City
Flowers, Mrs. Chas. E.....Zebulon

Gainey, Mrs. J. W.....Fayetteville

Hester, Mrs. J. R.....Knightdale
Hicks, Mrs. V. M.....Raleigh
Holloway, Mrs. O. W.....Durham
Hunnicutt, Mrs. J. W.....Asheville
Hurdle, Mrs. S. W.....Winston-Salem

Irwin, Mrs. J. R.....Charlotte

Jones, Mrs. Beverly N.....Winston-Salem

Keiger, Mrs. O. R.....Winston-Salem
Kerr, Mrs. J. E.....Winston-Salem
Kornegay, Mrs. L. W.....Rocky Mount

Lattimore, Mrs. E. B.....Shelby
Laughinghouse, Mrs. Chas. O'H., Greenville
Lee, Mrs. S. M.....Sanatorium
Lyon, Mrs. Brocton R.....Greensboro

Mann, Mrs. I. T.....High Point
McGee, Mrs. J. W.....Raleigh
McMillan, Mrs. R. D.....Red Springs
McPherson, Mrs. C. W.....Burlington
Miller, Mrs. J. F.....Marion
Moore, Mrs. Oren.....Charlotte
Montgomery, Mrs. J. C.....Charlotte
Mudgett, Mrs. W. C.....Southern Pines
Munt, Mrs. H. F.....Winston-Salem
Myers, Mrs. Alonzo.....Charlotte

Patterson, Mrs. J. R.....Kernersville
Perry, Mrs. D. R.....Southern Pines

Rainey, Mrs. W. T.....Fayetteville
Rankin, Mrs. W. S.....Raleigh
Ransom, Mrs. J. Lester.....Charlotte
Redfern, Mrs. T. C.....Winston-Salem
Register, Mrs. F. M.....Raleigh
Rogers, Mrs. J. R.....Raleigh
Rozier, Mrs. R. G.....St. Pauls
Russell, Mrs. Chas. R.....Granite Falls

Sadler, Mrs. R. C.....Whiteville
Scruggs, Mrs. Wm. Marvin.....Charlotte
Sharpe, Mrs. C. R.....Lexington
Sharpe, Mrs. Frank.....Greensboro
Shore, Mrs. C. A.....Raleigh
Slate, Mrs. J. S.....Winston-Salem
Smith, Mrs. William H.....Goldsboro
Speas, Mrs. D. C.....Winston-Salem
Spruill, Mrs. Jos. L.....Jamestown
Sprunt, Mrs. W. H., Jr.....Jamestown
Sutton, Mrs. W. G.....Seven Springs

Taylor, Mrs. F. R.....High Point
Thomas, Mrs. W. N.....Oxford
Townsend, Mrs. M. L.....Charlotte
Tuttle, Mrs. A. F.....Leaksville

Wilkerson, Mrs. Chas. B.....Raleigh
Williams, Mrs. J. H.....Sanatorium

MINUTES

OF THE

First Annual Meeting of North Carolina Fellows

OF

AMERICAN COLLEGE OF PHYSICIANS

The North Carolina Fellows of the American College of Physicians had a luncheon meeting at the Pinehurst Country Club, Wednesday, April 29, 1925. Those present were Doctors Chas. L. Minor, Asheville; J. P. Munroe, Charlotte; W. O. Nisbet, Charlotte; A. A. Barron, Charlotte; P. P. McCain, Sanatorium; A. McN. Blair, Southern Pines; and L. B. McBrayer, Southern Pines. Dr. R. McBrayer, Shelby, was unavoidably detained, and sent regrets.

A general discussion was had in regard to the value of the college to North Carolina interests, and methods of bringing the college to the attention of worthy men in our state.

The following were elected as an Executive Committee for the ensuing year: Dr. J. P. Munroe, Chairman; Dr. W. O. Nisbet; Dr. L. B. McBrayer, Secretary.

OFFICERS OF THE AMERICAN COLLEGE OF PHYSICIANS

President	ALFRED STENGEL, Philadelphia, Pa.
First Vice-President	ALDRED SCOTT WARTHIN, Ann Arbor, Mich.
Second Vice-President	CHARLES MARTIN, Montreal, Que.
Third Vice-President	STEWART R. ROBERTS, Atlanta, Ga.
Treasurer	CLEMENT R. JONES, Pittsburgh, Pa.
Secretary-General	FRANK SMITHIES, Chicago, Ill.

REGENTS

JAMES M. ANDERS, Philadelphia, Pa.
HENRY PLUMMER, Rochester, Minn.
LEWELLYS F. BARKER, Baltimore, Md.
F. M. POTTENGER, Monrovia, Calif.
JOHN A. LICHTY, Clifton Springs, N. Y.
FRANKLIN W. WHITE, Boston, Mass.
LEONARD M. MURRAY, Toronto, Ont.
JOHN PHILLIPS, Cleveland, O.
JOSIAH HALL, Denver, Colo.
FREDERICK TICE, Chicago, Ill.
E. R. STITT, Washington, D. C.
HARLOW BROOKS, New York, N. Y.
WM. GERRY MORGAN, Washington, D. C.
CHARLES LUCAS, Louisville, Ky.

EXECUTIVE COMMITTEE

To serve three years	LEWELLYS F. BARKER, Baltimore, Md.
To serve two years	STEWART ROBERTS, Atlanta, Ga.
	L. M. MURRAY, Toronto, Ont.
To serve one year	F. M. POTTENGER, Monrovia, Calif.
	ALDRED SCOTT WARTHIN, Ann Arbor, Mich.

THE ASSOCIATION

OF

COUNTY MEDICAL SOCIETY PRESIDENTS

OF

NORTH CAROLINA

On authority of the House of Delegates, the above referenced organization was perfected with Dr. J. R. Hester, President Wake County Medical Society, president; Dr. Spencer P. Bass, President Edgecombe County Medical Society, first vice-president; Dr. C. R. McAdams, President Gaston County Medical Society, second vice-president; Dr. J. E. Hobgood, President Davidson County Medical Society, third vice-president; Dr. Fred Nash, President Robeson County Medical Society, fourth vice-president, and Dr. W. J. Meadows, President Guilford County Medical Society, secretary-treasurer.

It was impossible for us to secure a roster of those present at the organization meeting.

REPORT

OF THE

Board of Medical Examiners of the State of North Carolina

K. P. B. Bonner, Secretary

Morehead City, N. C.

Since the publication of the report of this Board in the 1924 Transactions of the Medical Society of the State of North Carolina, licenses have been granted to applicants on three distinct dates: August 18th, 1924, December 2nd, 1924 and July 18th, 1925. In addition to the two regular annual sessions, a number of special sessions of the Board have been held during the past year. The winter session of the Board was held in Gastonia on December 2nd, 1924, at which only applications for endorsement were considered. The regular annual session required by law was held in Raleigh from June 22nd to 27th, 1925, and written examinations were given as well as endorsement applications considered.

Including fifty-one students taking the examinations of the first two years, a total of one hundred and seventy-two applicants have appeared before the Board during the past year. Subtracting the fifty-one students taking the partial examinations, one hundred and twenty-one applicants came up for license, of which number four were rejected and one hundred and seventeen were granted license. Of this number, eighty-two were licensed after written examination. Of the four rejections, three were rejected for endorsement and one applicant failed to pass the written examinations.

Doctor Joseph Lindsay Cook, Winston-Salem, made the highest general average on the written examinations, it being 94 5/7%. To Doctor William Horace Harrell, Mamie, went second honors with an average grade of 93 3/7%. Doctors Grover Cleveland Dale, Seven Springs, and Clyde Manly Gilmore, Bonlee, tied for third place with an average grade of 92%.

Licensed by Endorsement, August 18th, 1924

Name	*Address*	*College and Year*	*Certified by*
Marsh, Paul Ellis;	Kingsport, Tenn.	Bennett Medical, 1925	Tennessee

Licensed by Examination, August 18th, 1924

Name	*Address*	*College and Year*	*Gen'l Average %*
Plyler, Ralph Johnson;	Salisbury	Univ. Md., 1921	84 3/7
Scanlon, Wilko Gruver;	Durham	Vanderbilt Univ., 1923	86 6/7

Licensed by Endorsement, December 2nd, 1924

Name	*Address*	*College and Year*	*Certified by*
Bardwell, Frederick Albert;	Oteen	Harvard Univ., 1901	Massachusetts
Bush, George Freeman;	Carnesville, Ga.	At. Coll. P. & S., 1900	Georgia
Foley, Carroll Edward;	Lovettsville, Va.	Univ. Coll. Md., 1913	Virginia
Houston, Charles Edwin;	Virgilina, Va.	Med. Coll. St. S. C., 1901	South Caro.
McCabe, Joseph Levering;	Elizabeth City	Med. Coll. Va., 1917	Virginia
Mason, Frank Ebaugh;	Oteen	Univ. Md., 1917	Maryland
Parker, Herman Richard;	Greensboro	Syracuse Univ., 1923	Nat. Board.
Pate, Charles Henry;	Hendersonville	Med. Coll. St. S. C., 1904	South Caro.
Payne, James Wallace;	Epworth, S. C.	Maryland Med., 1903 Homeo. Dept.	South Caro.
Pullen, Charles D.;	Mt. Pleasant, Mich.	Univ. Mich., 1892	Michigan
Smith, Thomas James (C);	Americus, Ga.	Bennett Med., 1912	Georgia
Soady, John Hostley;	Toronto, Ont.	Univ. Toronto, 1905	Ontario
Sothoron, Levin Johnson;	Laurel, Md.	Georgetown Univ., 1896	Maryland
Speight, James Rufus;	Smokemont	Med. Coll. Va., 1890	Virginia
Woodruff, Paden Eskew;	Pickens, S. C.	Med. Coll. St. S. C., 1917	South Caro.

Licensed by Examination, July 18th, 1925

Name	*Address*	*College and Year*	*Gen'l Average*	*%*
Ader, Ottis Ladeau;	Lexington	Univ. Penn., 1925	88	
Bailey, Clarence Whitfield;	Roper	Jefferson, 1925	86	
Barnes, Dempsey;	Proctorville	Med. Coll. Va., 1925	86	1/7
Barnes, Tiffany;	Proctorville	Med. Coll. Va., 1925	84	1/7
Baucum, William Charles (C);	Raleigh	Howard Univ., 1924	88	6/7
Benbow, Edgar Vernon;	Winston-Salem	Jefferson, 1925	91	
Biggart, William Pomeroy;	Charlotte	Med. Coll. St. S. C., 1925	88	2/7
Blue, Waylon;	Carthage	Med. Coll. Va., 1925	91	4/7
Booker, Edward Nelson;	Clayton	Univ. Va., 1925	86	6/7
Bradsher, James Sidney, Jr.;	Oxford	Univ. Va., 1925	90	4/7
Buck, David M., Jr.;	Bald Mountain	Med. Coll. Va., 1925	88	5/7
Byerly, Marshall Paul;	Lexington	Univ. Md., 1925	87	5/7
Caldwell, Daniel Greenlee;	Concord	Univ. Penn., 1923	85	3/7
Cheves, William Grey;	Bunn	Jefferson, 1925	85	3/7
Cook, Joseph Lindsay;	Winston-Salem	Univ. Penn., 1925	94	5/7
Dale, Grover Cleveland;	Seven Springs	Univ. Penn., 1925	92	
Daly, Arthur George (C);	Gastonia	Howard Univ., 1925	80	1/7
Dickson, Robert Lee;	Silas Creek	Jefferson, 1925	85	6/7
Ditmore, Harry Boaz;	Old Fort	Univ. Penn., 1925	88	3/7
Dodd, Benjamin Roscoe;	Wake Forest	Univ. Md., 1925	87	1/7
Evans, Winborne Dewey;	Tyner	Jefferson, 1925	87	3/7
Farrington, Reno Kirby;	Cooleemee	Univ. Cinn., 1925	91	6/7
Garvey, Fred Kesler;	Elkin	Univ. Cinn., 1925	91	6/7
Gibson, Mack Wilson;	Statesville	Med. Coll. Va., 1925	80	5/7
Gilmore, Clyde Manly;	Bonlee	Med. Coll. Va., 1925	92	
Goudge, Mabel Ensworth (F);	Chapel Hill	Ohio State Univ., 1922	88	4/7

Name	*Address*	*College and Year*	*Gen'l Average %*
Gurley, Hubert Taylor;	High Point	Univ. Md., 1925	88 6/7
Hardee, Erasmus Bacon;	Stem	Med. Coll. Va., 1925	86 2/7
Harrell, William Horace;	Mamie	Jefferson, 1925	93 3/7
Hedrick, Clyde Reitzel;	Lenoir	Georgetown Univ., 1925	85 4/7
Hodge, Alonzo Richard, Jr.;	Knightdale	Med. Coll. Va., 1925	85 2/7
Howard, Corbett Etheridge;	Pink Hill	Univ. Penn., 1925	88 5/7
Hunter, Frank Patterson;	Warrenton	Univ. Va., 1925	88 2/7
Johnson, William Amos;	Raleigh	Univ. Penn., 1925	91 3/7
Kelly, Herbert Thomas;	Fayetteville	Jefferson, 1925	87 6/7
Kimbrough, Joseph William, Jr.;	Raleigh	Univ. Md., 1925	88 1/7
Knight, Floyd LaFayette;	Carthage	Univ. Va., 1924	87 5/7
Kutscher, George William, Jr.;	Asheville	Univ. Pittsburgh, 1923	85 3/7
Lasley, James Mecum;	Winston-Salem	Univ. Cinn., 1925	89 4/7
Lennon, William Earle;	Manteo	Univ. Md., 1925	86 6/7
Lindberg, Oliver Spurgeon;	Candler	Coll. Med. Evang., 1923	85 5/7
Little, Lonnie Marcus;	Statesville	Jefferson, 1925	89 4/7
Livengood, Baxter A.;	Winston-Salem	Univ. Penn., 1925	86 6/7
Lloyd, Perley Jason (C);	Washington	Meharry Med., 1925	82 3/7
McAnally, Alfred Loomis;	Madison	Univ. Md., 1925	85 6/7
Martin, Joseph A., Jr. (C);	High Point	Howard Univ., 1925	86 6/7
Martin, William Riley (C);	New Bern	Howard Univ., 1925	88
Massey, Clarence Sherman (C);	Monroe	Howard Univ., 1925	87 2/7
Meisenheimer, Thomas Melchor;	Charlotte	Univ. St. S. C., 1925	84
Mitchell, Thomas Brice;	Shelby	Univ. Penn., 1924	90 4/7
Monroe, Clement Rosenberg;	West End	Univ. Md., 1924	87 2/7
Moore, D. Forest;	Boiling Springs	Jefferson, 1925	88 6/7
Norburn, Russell Lee;	Asheville	Vanderbilt, 1925	84 3/7
Norfleet, Ashley Curtis;	Tarboro	Univ. Penn., 1925	90
Owen, Earl Welbourn;	Pilot Mountain	Vanderbilt Univ., 1925	82 2/7
Powell, Albert Henry;	Durham	Univ. Ga., 1924	86 3/7
Powers, John Frank;	Raleigh	Med. Coll. Va., 1925	85
Pressly, James Lowry;	Statesville	Jefferson, 1923	92 3/7
Ravenel, Samuel Fitzsimons;	Saluda	Johns Hopkins, 1923	89 3/7
Reeves, George Fletcher;	Winston-Salem	Med. Coll. St. S. C., 1925	83 3/7
Roberts, Bryan Nazer;	Hillsboro	Univ. Md., 1925	89 4/7
Robson, George McCrea;	Davidson	Univ. Penn., 1924	88 1/7
Roseman, Milo Absalom Jackson;	Salisbury	Jefferson, 1925	86 4/7
Sammons, Darius J. (C);	Lumberton	Meharry Med., 1924	83 4/7
Scruggs, William Joseph;	Brevard	Jefferson, 1925	91 2/7
Simpson, Henry Hardy;	Reidsville	Univ. Md., 1924	83 5/7
Smith, Annie Thompson (F);	Durham	Univ. Ill., 1923	85 2/7
Smith, Sidney Silas, Jr.;	Fremont	Tulane Univ., 1925	89
Stillwell, Harry Clifford;	Webster	Jefferson, 1925	85 2/7
Stone, Marvin Lee;	Kittrell	Univ. Penn., 1925	87
Sumner, Emmett Ashworth;	Randleman	Baylor Univ., 1925	85 4/7
Tucker, William Arnold:	Laurel Springs	Univ. Penn., 1925	89 2/7
Upchurch, Roy Wakefield;	Oxford	Univ. Va., 1925	85 6/7
Ward, William Titus;	Ryland	Univ. Md., 1925	88 2/7

Name	*Address*	*College and Year*	*Gen'l Average %*
Weaver, Harold Johnson;	Olin	Jefferson, 1925	90 5/7
White, Charles Sterling;	Stovall	Med. Coll. Va., 1925	91 3/7
Wiest, Paul Foreman;	Rippon, W. Va.	Univ. Md., 1921	83 4/7
Winstead, John Lindsay;	Elm City	Univ. Md., 1925	82 1/7
Wiseman, Perry Hayner;	Henrietta	Med. Coll. Va., 1925	87 2/7
Woodward, Jake Garrett;	Erwin, Tenn.	Univ. Penn., 1925	89 1/7

Licensed by Endorsement, July 18th, 1925

Name	*Address*	*College and Year*	*Certified by*
Boger, John Dohner;	Richland, Pa.	Phila. Medico-Chi., 1916	Penn.
Brigman, William Boyd;	Bishopville, S. C.	Med. Coll. Va., 1916	South Caro.
Britt, Charles Summey;	Charlotte	Emory Univ., 1920	Georgia
Corbett, Lacy Wood;	Goldsboro	Med. Coll. St. S. C., 1915	South Caro.
Ford, David Emerson;	New Bern	Univ. Mich., 1908	Michigan
Foxworth, Thomas Daniel;	Pageland, S. C.	Univ. South, 1901	South Caro.
Gates, Arthur Marion;	The Hollow, Va.	Med. Coll. Va., 1919	Virginia
Holton, Thomas Jefferson;	Brunswick, Ga.	Atl. Sch. Med., 1901	Georgia
Hyde, Francis Edward;	Spencer, Ohio	West. Res. Univ., 1920	Ohio
Mandelos, Nicholas A.;	Oteen	Geo. Wash. Univ., 1920	D. C.
Newsom, Robert Murray;	Ruby, S. C.	Med. Coll. St. S. C., 1911	South Caro.
Ownbey, Arthur D.;	Newport News, Va.	Med. Coll. Va., 1920	Virginia
Post, John James;	Greensboro	Coll. P. & S., N. Y., 1919	New York
Taylor, Wesley Ewing;	Greensboro	Univ. Mich., 1899	Michigan
Thomas, Daniel Rees;	Calderwood, Tenn.	Vanderbilt Univ., 1919	Tennessee
Thomas, Joseph Enloe;	Jefferson, S. C.	Univ. Md., 1911	South Caro.
Thompson, Malcom Drake;	Greenville	Univ. Penn., 1922	Nat. Board
Wells, Edmond Daniel;	Middlesboro, Ky.	Univ. Louis., 1910	Kentucky
Wier, Joseph Ellmore;	Asheville	Indiana Univ., 1913	Indiana

EXAMINATION ON HISTOLOGY, BACTERIOLOGY AND PATHOLOGY

1925

DR. C. A. SHORE

1. What is meant by anaerobic bacilli? Briefly describe three anaerobic bacilli which may cause disease in man.

2. What organisms are concerned in the etiology of bacillary dysentery?

3. Given a case of suspected malaria, (a) how would you prepare specimens for a laboratory examination? (b) describe the microscopic findings which would cause you to make a positive diagnosis, (c) what conditions would limit the value of a negative examination?

4. Given a case of suspected gonorrhoea, the diagnosis of which you wish to confirm by a laboratory examination, (a) describe method of securing specimen, (b) method of staining, (c) the microscopic appearance of the infecting organism.

5. In what diseases are streptococci the primary infecting bacteria? What streptococcic serums or vaccines have important therapeutic or immunilogical value?

6. Name two Cestodes and two Nematodes which commonly infect the intestinal tract of man and tell how you would identify the eggs of each.

7. Name the common causes of obstruction to the flow of urine from the kidney and describe the effect of various kinds of obstruction upon kidney and pelvis.

8. Briefly describe one disease associated with disturbance of each of the following glands, Pituitary, Adrenal, Pancreas.

9. Describe the resolution of an inflammatory exudate.

10. If you were called in to see a patient who had been bitten by a pet dog which apparently was in a normal condition, what (a) precautionary measures would you advise with reference to the patient? (b) the dog? (c) If the dog should die within a week of an illness suggesting rabies what steps would you take to ascertain the diagnosis? (d) Under what conditions would you advise prophylactic treatment?

EXAMINATION IN HYGIENE, CHEMISTRY AND PHYSIOLOGY

1925

Dr. Wm. M. Jones

1. Discuss briefly prophylactic vaccines.

2. Give various methods used to prevent mosquitoes from breeding in large ponds and lakes.

3. Give life cycle of common house fly and the various methods used to exterminate them.

Chemistry

4. Give chemical antidote for the following: arsenic, carbolic acid, lye, and treat a case of acute bichloride poisoning.

5. Give methods for determining the difference between renal-glycosuria and diabetes.

6. Give briefly the chemical changes taking place in respiration.

Physiology

7. (a) What per cent of blood may be lost (compared with body weight) by hemorrhage, without causing death? (b) In what order are the constituents of blood restored? (c) What are the functions of the corpuscles?

8. Name principal nerves controlling the act of deglutition.

9. What is Insulin? How administered and the precautions to be observed?

10. Give briefly the functions of the liver.

EXAMINATION ON ANATOMY AND EMBRYOLOGY

1925

Dr. L. A. Crowell

1. Describe the femur and name four muscles attached to the great Trochanter.

2. Describe the musculo-spiral nerve.

3. Name the foramina that open into the orbital cavity and the structures that pass through them.

4. Name and give the boundaries of the triangles of the neck.

5. Describe the great sacrosciatic foramen and name the structures that it transmits.

6. Trace a drop of blood from the internal saphenous vein to the right superior intercostal artery.
7. Describe the inguinal canal.
8. Describe the foramen of Winslow.
9. Describe the elbow joint.
10. Give origin, insertion, and nerve supply of the following muscles:
    Temporal,
    Depressor Anguli Oris,
    Serratus Magnus,
    Adductor Magnus.

EXAMINATIONS ON SURGERY

1925

Dr. L. N. Glenn

1. Characterize (a) benign tumor; (b) malignant tumor.
2. What factors govern time of amputation operations?
3. Mention conditions which interfere with reduction of fractures and how you would manage them.
4. Give cause, significance, and treatment of gangrene.
5. How would you guard against adhesions following abdominal operations?
6. What conditions govern location of surgical incisions?
7. Locate sources of pyuria and haematuria and give surgical significance of each condition.
8. Treat Pott's fracture; lower fibula fracture.
9. Recognize and treat intestinal rupture.
10. Give symptoms and treatment of depressed cranial fracture.

EXAMINATION ON PRACTICE OF MEDICINE

1925

Dr. Wm. P. Holt

1. Differentiate early gastric carcinoma from gastric and duodenal ulcer.
2. Discuss briefly:
    (a) Heart block.
    (b) Auricular fibrillation.
    (c) What effect on general health has an extra systole?
3. (a) Give symptoms and pathology of Hanot's Cirrhosis of Liver.
    (b) Name the different forms of cirrhosis of liver.
4. Define: (a) Barlow's Disease; (b) Banti's Disease; (c) Podagra; (d) Xerostomia; (e) Astosia.
5. Give diagnosis of early pulmonary tuberculosis.
6. Differentiate acute nephritis and pyelitis from acute appendicitis.
7. Name three diseases which have sites of local infection in which the pathogenic organism develops but the constitutional effects are caused by absorption of the toxines. Name some of the symptoms common to all three.
8. Name the specific cause of syphilis; incubation period, describe the initial lesion and differentiate chancre from chancroid.
9. Anthrax: Define, give synonyms, mention symptoms and differentiate from furuncle, carbuncle and cellulitis.

10. Differentiate erythema multiformis, acute psoriasis, erysipelas, purpura hemorrhagica, urticara, pellagra.

EXAMINATION IN MATERIA MEDICA THERAPEUTICS AND PHARMACOLOGY

1925

Dr. J. G. Murphy

1. Give the therapeutic application of drugs in the different stages of pneumonia.
2. Outline treatment of a case of melancholia.
3. Give treatment of a rattlesnake bite of a patient to whom you are called immediately after it occurred.
4. (a) Define and describe alkaloids.
   (b) In what form are they usually prescribed?
   (c) Name an antidote for three alkaloids.
5. Give the physiological action of veratrum and aconite and name diseases in which they are useful, stating doses.
6. Outline (medicinal not surgical) treatment of a gastric ulcer.
7. How do strophanthus and digitalis differ in physiological action?
8. An anaesthetic being indicated, state the conditions that render ether preferable and those that render chloroform preferable.
9. Write one prescription each for the following:
   (a) Insomnia.
   (b) Cholelithiasis.
   (c) Iritis.
   (d) Acute otitis media.
   (e) Glaucoma.
10. Give symptoms and treatment of poisoning by phosphorus.
11. (a) What is cumulative action?
    (b) Name one drug that has this tendency and give symptoms of such action.

EXAMINATION IN OBSTETRICS, GYNECOLOGY AND PEDIATRICS

1925

Dr. K. P. B. Bonner

1. Give the diagnostic signs of recent delivery.
2. Outline the treatment of a patient at or near term exhibiting pre-eclamptic symptoms.
3. Define: (a) Abderhalden's Test; (b) Inversion of uterns; (c) Hydramnios; (d) Puerperium; (e) Hegar's Sign; (f) Epsiotomy; (g) Funic Souffle; (h) Hyperemesis Gravidarum.
4. Discuss the prevention and early signs of carcinoma of the uterus.
5. Give the diagnosis and detailed operative procedure of fibroid of the body of the uterus.
6. Define: (a) Urethrocele; (b) Superinvolution of uterus; (c) Myomectomy; (d) Persistent Cloaca; (e) Caruncle; (f) Nymphomania; (g) Multilocular Cyst; (h) Hysterocele.

7. Give the symptoms, diagnosis and treatment of rickets.
8. Outline a rational method of feeding a baby during the second year.
9. (a) What is Laryngitis Stridulosa?
   (b) Differentiate chorea and tetany.
   (c) Define icterus.
   (d) Give the symptoms of cyclic vomiting.
10. (a) Name the pathognomonic signs of pregnancy.
    (b) Mention the common affections of the vulva.
    (c) Contrast the percentage formula method of infant feeding with the caloric.

NORTH CAROLINA STATE SECTION

OF THE

AMERICAN COLLEGE OF SURGEONS

"SEVENTH YEAR" MEETING

MONDAY, APRIL 27, 1925

CAROLINA HOTEL

PINEHURST

MONDAY AFTERNOON SESSION

APRIL 27, 1925

The meeting of the North Carolina State Section of the American College of Surgeons convened in the Carolina Hotel, Pinehurst, N. C., at 2:15 P. M., Dr. A. M. Whisnant, President of the Section, presiding.

INVOCATION

REV. T. A. CHEATHAM, D. D., Pinehurst: O Lord, our Heavenly Father, we come to Thee for wisdom and inspiration. We desire to use aright the gift of life, to give quality to our contribution so that the world may be a fairer place and a better place because we have lived.

We feel that Thou art the inspiration of our best thought and our best work, and we ask Thee to inspire us to go forth to put the best that we have and are into what we do. We ask that Thou wouldst come and direct all of the meditations, all of the thoughts of this meeting. We ask for Thy presence with us. Give to these noble men a worthy sense of their profession, that they are working with Thee, that they are helping to make the world well and happy and strong. Give us patience and devotion and skill and the spirit of consolation.

Help us in all that is done during these meetings that we may put truth into all our efforts and glorify Thee and bring respect to ourselves through Jesus Christ our Lord. Amen.

FURTHER OBSERVATION ON KIDNEY AND BLADDER STONES WITH SPECIAL REFERENCE TO RECURRENCE*

C. O. DELANEY, M. D., LAWRENCE CLINIC,

WINSTON-SALEM, N. C.

Recent investigations have shown that recurrence of urinary calculi is very frequent. These investigations have also shown that operation for removal of calculi without subsequent treatment and the removal of the cause invites recurrence.

*Read by Dr. C. S. Lawrence.

Cabot and Crabtree[2] in 1915 reported that the follow-up record on 87 cases of stone in the kidney and ureter showed that 38 had recurrence.

Braash[3] in 1917 reported that in a series 88 patients who were operated on for nephrolithiasis 13, or 14.7 per cent, had recurrence, 15 gave a history of probable recurrence and 18 had passed stones subsequent to operation.

Barney[4] was able to obtain data on 35 of a series of 70 cases of nephrotomy done over a period of 25 years. Out of 16 who had roentgenographic examination 14 showed the presence of stone in one or both sides, giving a percentage of 40 for those whose definite results were known.

Lau[5] reports that in general surgical service at the New York Hospital from January 1, 1914 to January 1, 1924 there were admitted 304 cases of urinary calculi, classified as follows; kidney 205; ureter 73; and bladder 26. Eighty-three operations were done for nephrolithiasis and 27 operations for stone in the ureter. Among these patients 3 per cent passed stones before admission and 3 per cent had operation for stone prior to admission. Of this series 22 patients or eight per cent were operated on for stone in the kidney or ureter, who subsequently demonstrated recurrence.

Hunner[6] in February 1925 reported 3 recurrences in the same kidney after the opposite kidney had been removed over a period of little more than a year.

The following abstracted case history will illustrate some of the attempted points of this paper.

G. M. M.: Married man age 44, who came to the hospital April 7, 1924. Had had gastro-enterostomy for duodenal ulcer ten years before and the appendix was removed at the same time. For several years he had frequent attacks of sore throat, tonsils removed 6 years ago. All teeth had been extracted for pyorrhea.

Ten days before admission he began to have slight pain in the left lumbar region which gradually became worse, accompanied by macroscopic blood in the urine. The pain was intermittent and suddenly became very severe two days ago, requiring opiate.

April 7th: Roentgen-ray examination was negative for stone in the urinary tract. A pyelogram of the left kidney disclosed a small oval stone in the left kidney pelvis overcapped by sodium bromide solution. Also a stricture of the ureter about three inches from the

[2]Cabot, Hugh, and Crabtree, E. C. Frequence or recurrence of stone in the kidney after operation. Surg. Gyn. & Obs. 21; 223-225, 1915.

[3]Braash, W. F. Clinical data of nephrolithiasis Jan. 1, 1898, to Jan. 1, 1916. (Surg. Gyn. & Obs. 24-8, Jan. 1917.)

[4]Barney, J. D. Question of recurrent Renal Calculi. Surg. Gyn. & Obs. 35; 743-748, Dec. 1922.

[5]Lau, J. D. Recurrent calculi in the urinary tract. J. A. M. A. 272, Jan. 24, 1925.

[6]Hunner, Guy L. Ureteral Stricture. J. A. M. A. Feb. 16, 1925. Also Personal Communication.

kidney. He had marked ptosis of both kidneys. The urine contained many leucocytes and few erythrocytes. Culture showed abundant colon bacilli. Phthalein right 35, left 15.

April 9th: Pyelotomy was performed on the left. [1]The kidney pelvis was found to be dilated and a small soft stone was removed from the pelvis. The pelvis and ureter were irrigated with saline solution, the pelvis was closed with No. 1 chromic catgut and the wound drained with two cigarette drains. The stone was composed of ammonium and calcium phosphate.

April 16th: The left ureter was dilated to size 11 French and both kidney pelves irrigated with 1 per cent silver nitrate solution.

April 19th: The patient left against advice but promised to return for further treatment. He returned twice for kidney lavage and ureteral dilitation.

November 26: The patient was readmitted complaining of frequent and painful urination and dribbling. These symptoms began four months before and gradually became worse. Roentgen-ray examination showed a large spherical stone in the urinary bladder. The urine showed abundance of pus and the culture showed the presence of staphylococus aureus and colon bacillus. Two hour functional test showed 45 per cent elimination.

November 27th: Under local anesthesia supra-pubic cystotomy was preformed. The bladder was tightly contracted around a large spherical stone which was broken in removing. The mucosa resembled a pyogenic membrane. The stone, which weighed 100 grams, was very soft and composed of ammonium and magnesium phosphate with a small amount of calcium phosphate. Daily bladder irrigations were carried out.

December 24th: The patient left the hospital against advice but promised to return after the holidays. He returned occasionally for bladder irrigations and dressing of the supra-pubic wound.

January 16, 1925: The patient was readmitted complaining of severe colicky pain in the right lumbar region, high fever and nausea. This time his condition was too serious for immediate examination. He was put to bed, given forced liquid diet and morphia.

January 19th: X-ray disclosed a large oval stone in the right renal pelvis. The ureters, the left kidney and the bladder were negative for stone.

January 28th: Right pyelotomy was preformed, a soft stone (2½ by 4 cm.) was found in the renal pelvis. The kidney pelvis and ureter were irrigated with saline solution and the ureter was dilated to size 12 French. The wound was closed without drainage. The stone was composed of ammonium and calcium phosphate.

February 9th: The wound was healed. Both kidney pelves were lavaged with 1 per cent mercurochrome solution.

[1]This operation was performed by Dr. W. C. Stirling, who was then at the Lawrence Clinic.

February 12th: The left ureter was dilated to 14 French and both kidney pelves were lavaged with 1 per cent silver nitrate solution.

February 17th: The patient was discharged to return for further treatment. The urine at this time still contained much pus and the culture was positive for colon bacilli. He returned in less than one month and his general condition was much improved.

April 12th: The patient returned at my request, when asked about his condition he states that he never felt better in his life and has gained 15 pounds since the last operation. The urine at this time still showed many leucocytes and the culture was still positive for colon bacilli. Roentgen-ray examination disclossed a small stone in the pelvis of the left kidney.

This patient belongs to a class of individuals who call upon their physician only in emergencies, when the crisis is over they return to their homes and calmly wait for another. Each operation in this case was I believe a life-saving proposition. Post-operative treatment could not be carried out and consequently his interval of comfort was short. The first examination showed the presence in the urine of a pyogenic infection and this infection still exists.

The contributory causes of urinary calculi are many and varied, the constant factors in this case were infection and obstruction.

Hunner maintains that ureteral stricture is the commonest cause of recurrence of Renal and ureteral calculi. The work of Bumpus and Rosenow has shown us the importance of eliminating foci of infection in the teeth, tonsils and sinuses in a study of urinary calculi.

Ochner and Rovsing believe that two liters of distilled water daily will prevent recurrence.

Cantani has outlined a sugar free diet which he includes as post-operative routine in all cases.

Lau emphasizes the necessity of relieving obstruction whenever present, and the correction of all known anatomic, metabolic and bacterial irregularities. He states that repeated cultures from the urines of the involved kidney in his recurrent cases B-coli-communis, proteus, or pyocyaneus in all cases and in all of them some form of stasis had been present.

Walker maintains that uric acid and calcium oxalate stones recur rarely while phosphatic calculi recur frequently. This is borne out by the reports of other writers, but in cases of long standing a mixed stone is usually the ultimate result.

CONCLUSION

To summarize these remarks the following conclusions may be drawn.

1. Obstruction should always be sought for and relieved.
2. Infection is practically always an attendant factor in recurrence of urinary calculi and should always be combatted.
3. Foci of infection should be removed.
4. Recurrence of renal calculi are much more frequent when nephrotomy is performed than when pyelotomy is done.

5. Operative technique should include precaution against left-over particles of calculi.

6. Phosphate stones are more prone to recur.

DISCUSSION

Dr. A. J. Crowell, Charlotte: The percentage of stone recurrence in the urinary tract is great, but we believe far grater than it should be. The recurrence can often be prevented by a careful study of each case to ascertain the etiology of its formation. There are certain systemic conditions which are known to be predisposing causes, and others which are reasonably certain to be predisposing causes. Cystin uria is certainly a known cause, and infection is almost as certainly a known cause. Debris from any cause in the kidney pelvis forms a nucleus upon which the salts of the urine may be precipitated and deposited.

Great care then should be taken to eliminate every predisposing cause of urinary calculus. We should not be satisfied to know that there are no cystin crystals in the urine, but we must also know that there is no cystin in solution, in order to treat the systemic condition intelligently and prevent stone reformation.

If we have both cystin uria and infection, it is doubly certain that we will have recurrence without precautionary measures, both local and systemic. The former must be counteracted by diet and urinary alkalinization, and the latter by pelvic lavage with antiseptic solutions until the infection is obliterated.

Another precautionary measure of great importance is to be certain that no particles of stone, blood clot or debris of any kind are left in the kidney at the time of operation to act as a nucleus upon which the salts of the urine may be deposited. Pelvic lavage, following ureterolithotomy, pyelotomy or nephrotomy is advisable in all cases, and imperative in cases with infection.

Analysis of stones removed is of greatest importance. I notice that Dr. Lawrence has been analyzing the stones removed. I think that is quite important in order to find out if there is any cystin in the stone, because if you have cystin uria, and you have that knowledge, you can do a great deal to prevent recurrence of stone formation.

We should not be satisfied to ascertain the presence of ammonium and calcium phosphates, but urates, uric acid, etc. We have seen cystin combined with other stone-forming constituents and of course made their recurrence far more certain. When I see such rapid recurrences as in the cases mentioned by Dr. DeLaney and Dr. Lawrence, I always suspect cystin uria as a complication.

I say that because we have some cases that we had recurrence, or recurrence was reported before the cases came into our hands. We found cystin uria and crystals in the urine. As a result of alkalinization of the urine we not only got rid of the stones present but thus far we have prevented reformation.

I did not have time after receiving a notice that I was to discuss Dr. DeLaney's paper to look up our records and get in touch with

our patients operated upon to ascertain definitely the percentage of recurrence in the urinary calculus, but in discussing the problem with my associates, we could recall nothing like so great recurrence as that reported from the literature in Dr. DeLaney's paper.

Considerably more than 300 ureteral stones have been removed at our clinic by cystoscopic manipulation. I would say that we have not had more than one per cent recurrence following removal of stones by pyelotomy and operations upon the kidney—I can't think of the word now—for stones in the urinary tract. We believe this is due to precautionary measures instituted.

I heartily agree with Dr. DeLaney that recurrence of renal calculi is much more frequent following nephrotomy than pyelotomy. We very seldom do a nephrotomy since practically all kidney stones are in the pelvis and can be removed by pyelotomy.

Dr. L. A. Crowell, Lincolnton: I believe if these people who have a recurrence of these stones would lead a more active life and constantly drink quantities of water, and thereby eliminate a lot of the salt in the urine before stones could be formed, they would be better off.

I know that thing applies in gallstones. Daever says, "fair, fat and forty," and I think he should add one more word. It is the lazy people, as a rule, who have gallstones. (I think that is an almost universal rule) people who lead an indolent life. I don't know whether that applies in renal stones or not, but just looking at the thing from a common-sense standpoint, if a man leads an indolent, sedentary life, he is more apt to develop gallstones. I believe that same thing would apply to renal stones.

To prevent the formation of those stones after they have once been removed, I think a man should lead an active life and have active elimination, thereby, in a measure, preventing the reformation of stones. If I had a stone removed from my kidney, from that time on I would take very active exercise and drink all the water I could get in and eat fewer meats and solid food.

Dr. W. M. Coppridge, Durham: This is a subject in which I have been very much interested for the past several years. I had one very interesting case which is right along the line of this mentioned by Dr. Lawrence. I reported about three years ago a case of extreme alkaline incrustation of the bladder; the entire bladder wall was lined with calcium phosphate, probably a quarter of an inch thick.

We finally succeeded in removing that by injecting bulgaricus bacilli in the bladder. The patient's urine was very strongly alkaline. We couldn't get his urine acid by the ordinary drugs, so we resorted to bulgaricus bacilli.

Following this we tried to put him on treatment which would keep his urine acid or approximately so. By giving him tremendous doses of sodium acid phosphate over a long period of time we were

able to get his urine slightly acid enough to prevent the formation of this calcium phosphate.

After about two years of that treatment, he drifted away, stopped his acid phosphate treatment, and I have him in the hospital now with four or five large stones in the right kidney.

I think one of the most important things in preventing recurrence of stones is the reaction of the urine afterwards. If it is a phosphatic stone and we are able to keep the urine acid we will not get a recurrence. Phosphatic stones will not form in acid medium. It it is a cystin stone or oxalate, you will prevent a recurrence by alkalinization of the urine.

Dr. C. S. Lawrence, closing the discussion: My experience as a general surgeon in these cases is that the recurrence of stone is due to the same thing that causes the stone in the first place—infection as a rule. The prevention of recurrence is a question of getting the patient to continue treatment long enough to remove the primary cause.

Stones in the kidney, ureter or bladder are the result of something further back. That something further back is called focal infection—whether it be in the gall bladder, tonsils, teeth, sinus or whatnot.

The successful treatment of these cases means the obliteration of the foci, and cleaning up the debris and damage produced by the focal infection. (Applause.)

President Whisnant: The next paper is by Dr. G. Carlyle Cooke on "The Relation of the Surgeon to the Roentgenologist, Pathologist, and Follow-up Record." In the absence of Dr. Cooke, we will have Dr. Hubbard present this paper.

THE RELATION OF THE SURGEON TO THE ROENTGENOLOGIST, PATHOLOGIST AND FOLLOW-UP RECORD

G. Carlyle Cooke, M. D., Winston-Salem

One writer of authority has said that the average practitioner with the only apparatus which he is accustomed to have at his finger tips can make 85 per cent of his diagnoses correctly, and yet we continue to increase our laboratories and make use of numerous skilled specialists in behalf of diagnosis. That correct diagnosis is our greatest asset to successful surgery, goes without saying and it is upon the 15 per cent correct diagnosis that our seccess mostly depends. The very fact that the greater part of our time, energy and money are spent in efforts to correctly determine the condition of 15 per cent of the cases is sufficient evidence to lead one to believe that we have been striving for greater development through poorly planned channels of study. With this in view and in hearty sympathy with the constant struggle for increased efficiency in diagnosis, I present this essay as a suggestion to that end.

We should hold the history and physical examination as the most important data obtainable and these should not be lost sight of at any point during the study of a case. These should be as important in the mind of the roentgenologist and pathologist as in that of the surgeon, because it is not for the benefit of the individual case alone that we study it, but should be another effort toward better acquainting ourselves with disease conditions, and every case that every doctor has the privilege to observe, whether from a surgical, roentgenological or pathological standpoint, should be a new page in the study of human ailments. An old and often practiced idea that the technician should not know the history or physical examination, in order that he may give an unbiased opinion, is erroneous, because the history is the best guide to well-directed investigation, excepting of course, those conditions in which well-known pathognomonic signs have been well established. It is possible, however, that some cases are obscure because the sign or symptom has not had time to develop,and it is the obscure condition that we should insist upon more scientific system of investigation. In fact it is reasonable to believe that our ability to check the ever-raging cancer scourges will not come about by any great sensational discovery, but through methods of more early diagnosis.

Even when the diagnosis is fairly certain from the history and physical examination it is often very gratifying to the surgeon to have his opinion corroborated by laboratory findings, and as a result the roentgenologist usually has the first vision of things under the surface. The man who interprets this vision certainly plays a great part in the final result. The x-ray never lies but its interpretation requires more than speculative consideration. How should the roentgenologist get his training? Usually the roentgenologist has gained his knowledge of the subject by the teachings and observations of other men, have formulated conclusions, many of which are incorrect, and does not progress rapidly beyond this teaching, but remains content to leave things as they have been taught, not being able to detect that course which does not "run true to course" continuing to make errors.

Surely it is not an intention to require the surgeon to be an expert roentgenologist or pathologist, but every person who takes upon himself the responsibility of relieving 100 per cent of the surgical class of disease should be thoroughly familiar with x-ray possibilities. No two persons are capable of always viewing the same thing in the same light, therefore the surgeon should go with his patient to the x-ray room and view the same screen and plate with his co-woker at the same time in full consideration of the history and physical examination. By this practice in our clinic, we have been able to effect some remarkable results which otherwise may not have been. By previously knowing the actual topography as well as the nature of a lesion, often gives the surgeon time to plan some procedure before operation. Mention of one case in this connection is worth while, in which an almost complete transformation

was made in a young woman by performing a gastro-enterostomy. There was no disease of the stomach nor duodenum other than a congenital kinking of the duodenum causing a six-hour retention.

Likewise the roentgenologist should not be content to confine his research to the laboratory alone, but should follow his case to the operating room, if possible assist in the operation as often as can be arranged, there view and examine those organs by actual sight which he has viewed by shadow only. This should be done not only to verify his impression, but if there be an error to ascertain the cause for his error. In this way and this way only will the roentgenologist be able to increase his efficiency or exceed the ability of his predecessors. Just as much as the surgeon should the roentgenologist study the history and physical examination of the patient and keep them in his record.

Along with the surgeon and the roentgenologist at every operation on obscure conditions, should be their most intimate co-woker, the pathologist. He also should know all that can be found out about the case, not altogether for his opinion as to the pre-operative diagnosis, but so that he can keep in mind the symptoms that his pathological tissue produced during life, its rate of development, distribution, mode of operation and the result of surgical treatment. He should see the morbid anatomy, the diseased tissue in situ, the condition of tissues in juxtaposition as well as remote, all in direct association with the surgeon and x-ray man. Pathologists in general have had a tendency to not only urge postmortem study, but have been content with the study of dead pathological material or at least with the specimen in the laboratory. This is a condition of affairs that I believe has caused the lack of more advanced knowledge along many lines. By reviewing the work of McCarty, the careful thinker cannot but be impressed with the great possibilities in the future for a real understanding of cell activity, and after all disease begins in the cell.

Then after the specimen for microsiopic study has been obtained, and all has been done for the patient's health and happiness that is possible through surgery, none of the three student's study is complete, but together they should view the microscopic picture in every detail and all the observations recorded. Such correlation of impressions will serve to render a more dependable diagnosis in the future cases, by checking the accuracy of the interpretation of x-ray shadows, the surgeon's ability to determine and allay disease conditions at operation, general increase in the understanding of the disease, and placing each on a stronger foundation for self-confidence and accuracy.

By conducting our work at the Lawrence-Cooke Clinic through such a routine we have been able to make a record for our last two years' work of 100 per cent correct diagnosis in disease of bone, according reports by either Dr. Bullit of Chapel Hill, or Dr. Bloodgood of Baltimore, Md., who have checked our findings in all doubtful cases, and approximately 98 per cent in gall-bladder disease

with or without stones, gastric and duodenal ulcer, primary appendiceal disease and kidney conditions. Accuracy in diagnosis has not been the only benefit derived from this routine, but a clearer understanding of the morbid process prevails which has been of equal benefit in treatment. For instance, we have found in our run of cases that gall-bladder disease has been more often the cause of a six-hour gastric retention than primary diseases of the stomach or duodenum, and when this condition ensues, removal of the organ has been the only cure. We have been led to consider infection of the gall bladder according to the point of attack. In a series of over 100 gall bladders studied, all have shown a characteristic picture on screen and plate, many similar cases previous to two years ago had been erroneously interpreted as disease of other organs or simple spasm. Gall bladders containing stones never show a normal mucous membrane and contain contaminated bile, usually healthy walls and no adhesions, while most of those with adhesions do not have stones and many show an intact mucous membrane. The muscular and subserous layers of the latter showing marked round cell infiltration, thus the inference that blood born infection result in an interstitual inflammation, producing thickened, noncontractile walls and adhesions to other viscera. This accounts for the chronic so-called indigestion or "after-meal distress," most usually never a typical gall bladder colic, coming on in early life and not associated with stones. Simply breaking up adhesions around the apparently normal viscus will not affect a cure, because of the spread of infection by continuity of tissue to the liver and other surrounding organs, and finally the organ becomes a point of focal infection within its self.

While on the other hand if the infection begins in the mucous membrane from infection that has filtered through the liver from the portal circulation into the bile, bacteria and infectious debris are present in the bile sufficient to form the nucleus of stones, in which condition we have invariably found scarring and every evidence of previous liver infection, whether or not they have had colic attacks. This was illustrated well in one patient from whom we removed a gall bladder containing several large stones at the age of 14 years. These as well as observations in many different lines through this form of study have brought results that we could not have had in any other way.

Now last, but not least, have we cured the patient? Time and time only will tell the story, that gives us true statistics, determines our ultimate reputation and worth to the community. A well systematized and persistently worked follow-up record is a receipt for our material investment, and will show our dividends or loss, which is equally as important to each of the three co-workers for future investment.

There are also several factors to be considered when counting the worth of follow-up records. First, if you are dependent on the patient's statement, it is necessary to know whether or not he has paid his bill when unsatisfactory results are reported. Our records

show that far greater numbers report unsatisfactorily who are in debt to the clinic. Again it is necessary to know whether the patient who answers that he is not well, is suffering from the old disease or a new one. Other patients have a mental attitude toward life that renders their report worthless from a statistical standpoint. After all this is a plea for us all to strive ever upward and not allow ourselves to become narrow in our fields of usefulness through the practice of specializing.

DISCUSSION

PRESIDENT WHISNANT: Dr. Hubbard is our invited guest today and we appreciate very much his presence. We will ask him to open this discussion.

DR. FRED C. HUBBARD: Gentlemen, I haven't gotten as much out of it, probably, as I would have gotten if I had listened to it. I don't know of any more important subject that has to do with the field of surgery than this subject that he has written on here—the relation of the surgeon to the roentgenologist, pathologist and follow-up record.

I think you can sum the whole thing up in one word—coöperation—coöperation between the different members of the clinic or the co-workers. That applies to every other branch of medicine and every other specialist in the field of medicine and surgery. I think that coöperation is the keystone word. Without that of course we can't hope to go far. I think that modern medicine owes a great deal to that and I am sure that the future of medicine depends largely on coöperation. I hope we will all get the idea of coöperation because I am sure that is the burden of his song here. I am sure that the future of our profession depends largely upon it.

Thank you. (Applause.)

DR. A. J. CROWELL, Charlotte: I would just like to say that it is all right for the surgeon to go with the roentgenologist and study his pictures with the roentgenologist, and it is all right for the roentgenologist to witness the operations of the surgeon—and I think the latter the more important of the two—however, I just want to put in a word of warning against relying too much on instruments of precision.

They are all right in their place, but the man who neglects to use his brain and think while he is going over a case is the man who will make most mistakes. The tendency is, I am afraid, to throw more stress upon instruments of precision than symptoms. I have made mistakes and each of you has made mistakes by relying too much on x-ray pictures and not enough upon our clinical symptoms. Coöperation between the two is quite important.

DR. C. S. LAWRENCE, Winston-Salem: I want to correct an impression I think that has gone out that this discussion has led into the x-ray diagnostic part of surgery and medicine. I think the first part of the paper brought out the fact that the most important thing in the diagnosis of surgery and medicine was first the history of the

case, the next the physical examination. We consider that worth at least 80 per cent of the diagnosis.

However, if we have a patient who comes in, as Dr. Crowell of Lincolnton says, who is fair, fat and forty and has had colic for ten years and attacks of jaundice, with tenderness under the costal margin right, we make diagnosis of gall-stones, gall bladder disease, but we usually x-ray them just the same—we make an x-ray picture and fluoroscope them.

One word in regard to follow-up records. I didn't know how sorry a follow-up record was until I tried it. We have been doing this more or less for the past four years. About a year ago I sent out cards to all the gall-bladder patients that we had operated on. I just asked them one question, "Are you well?" About seventy-five per cent of them answered that they were well.

I don't have the exact percentages here with me. However, another percentage said they were improved. Then there was a percentage (we looked up the records afterwards and found they hadn't paid their bills) said they got very poor results. It reminded me of what a dentist told me one time: That teeth never fit until they are paid for. Then we had another percentage of patients that were not improved.

We find that when we write to these patients that are not improved, to come back to see us, they are suffering with some other condition. Most often it is pyelitis, cystitis, rheumatism from focal infections. When those conditions are cleared up the patients get well and not until then.

Then there is another small class of patients who live up in the mountain section of North Carolina. A great many of you have seen them if you have attended church in the country up there. In the olden days when you would drive up and hitch your horse to a tree and go over into the church-yard and meet old brother Jones and say, "How are you?" he would say, "I am not well at all."

"How is your wife?"

"She is never well."

"The children well?"

"No, they are all complaining. They are never well."

There are a certain class of people who are never well. Thank the Lord for it. It is somewhat like the boy who was drafted into the Army. His mother came along crying. The doctor who examined him said, "This boy has a bad heart; he can't go into the Army He will be lucky to be living twelve months from now." The mother said, "Thank the Lord for that."

A great many of our patients come to us with an outstanding symptom. When we look into that outstanding symptom we find that there are other conditions that have given them trouble. They may have a very bad ingrowing toenail that will give them as much trouble as stone in the ureter. If we don't cure the ingrowing toenail the patient is not well, and is never well until we cure it.

I have a case in mind in which the patient had a stone in the kidney pelvis. She had gall-stones and a duodenal ulcer at the same

time. If we had cured her of the stone in the kidney she would have still suffered with the gall-stones and the duodenal ulcer; and vice versa. As it was we removed the stone in the kidney, turned her over and made an incision over the gall bladder and removed the gall bladder, did a gastro-enterostomy. She stood the operation as well as if we had done the kidney alone, and had an uneventful recovery and was well afterward.

I mention these things to call your attention to the fact that whatever ails the patient is a great deal to him and he is looking for a cure. If he has a leg ulcer that is just as much to him as a duodenal ulcer; in fact it is more, because he can see the leg ulcer and he can't see the duodenal ulcer. (Applause.)

Dr. H. H. Newman, Salisbury: As has been stated in Dr. Cooke's paper, I don't feel that we go deeply enough into history. I think that there are so many things that our patients forget, even when we question them, that would help us a whole lot.

The particular case I want to mention is one of a very prominent man in my town who is clerk of the court. He lives next door to me. About a month ago his mother called me hurriedly. I went to the home and this fellow was on the steps where he had fallen. He was very pale; I thought he was dead. He had no pulse. I lifted him up and put him on the davenport and gave him a hypodermic injection. In a little while I could feel his pulse and he regained consciousness.

His family physician soon came in and he observed him for some while; had him in the hospital for several weeks. About the second day from that time there was a large amount of blood in the stool, very black. This fellow had had a history of indigestion for some time.

He was sent to Philadelphia for study and observation. Greatly to my surprise the report came back that the man had appendicitis, and they removed his appendix. I looked at any time for another hemorrhage. They made complete x-ray studies at Philadelphia. In this case I believe that the roentgenologist had diagnosed the case as duodenal ulcer, but the surgeon in that case had evidently overlooked a very important history.

RADICAL OPERATION FOR CARCINOMA OF THE BREAST BY STEWART'S INCISION

D. T. Tayloe, Jr., M. D., Washington

The most important factor in dealing with carcinoma of the breast is a very careful determination of the operable and inoperable cases. This differentiation can only be determined by a very thorough history, physical examination, x-ray and laboratory study. According to our best authorities, early and radical surgery is the treatment for early carcinoma of the breast, and a very high percentage of permanent cures have been reported by such men as Deaver and Halstead and others. We are justified in operating

upon every case we conscientiously feel there is some hope of obtaining a permanent cure. Of course there will be a large number of doubtful cases along with the encouraging ones in this group. But if we expect to benefit our patient, and at the same time do our part towards educating the public regarding the importance and necessity of early operation, we must not operate upon obviously inoperable cases simply because the patient so desires. It is far better to tell these cases of advanced carcinoma with inaccessible metastasis, that they have presented themselves too late for operation, than it is to operate in the face of failure, which will do the patient no good, but does do surgery harm. It helps to spread the already existing belief among the laity that surgery is of no avail in the treatment of cancer. Recurrent carcinoma following operation is a most alluring advertisement for the cancer quack and has been the means of many operable cases of carcinoma falling victim to the paste healers and other forms of quackery. It is also proven bad judgment to keep apparently innocent tumors of the breast under observation too long in an effort to reach a definite diagnosis. It must be remembered that 80 per cent of the tumors of the breast are carcinoma; hence it is a good plan to consider them all malignant until proven otherwise. Where doubt exists as to the type of tumor it is far safer and better to excise a piece of the growth for a microscopical examination. Every case of carcinoma of the breast should have a thorough x-ray study of the chest before operation to exclude the possibility of mediastinal or pulmonary metastasis. In addition to the routine x-ray study of the chest, a most careful analysis of the patient's subjective symptoms should be made. Not infrequently a case, with negative x-ray findings of the chest, complaining of indigestion, persistent lumbago, rheumatism, etc., will be found, when carefully studied, to have a metastasis in the region referable to the symptoms.

After the case is considered operable, there are numerous operations at our disposal. There are probably more different incisions for radical amputation of the breast than any other operation, most of them very good. For the past three years I have been using the incision first described by Dr. Francis T. Stewart and find it very satisfactory. It possesses many advantages, and is devoid of most of the disadvantages accompanying the usual incision for this operation. The Stuart operation removes in one piece the entire breast and overlying skin, the costal portion of the pectoralis major, the pectoralis minor, the fat, fascia, and lymph glands of the axilla. The incision is less mutilating than the others and at the same time extensive enough to permit thorough exposure and easy access to the structure to be dealt with. The Stuart incision does not run onto the arm or through the axilla in which location a contracting scar may interfere with the function of the arm or press upon the underlying blood-vessels and nerves. The axilla is attacked first, to determine the extent of lymphatic involvement and the advisability of a radical operation. The blood-vessels supplying the breast are ligated once and for all at their origin from the axillary, thus

minimizing hemorrhage, economizing time and preventing shock. The lymphatic drainage is suppressed in the beginning, lessening the possibility of neoplastic dissemination. The breast and pectoral muscles are left until the final stage of the operation as a warm covering for the thorax. Due to the location of the incision a second incision is not necessary for drainage, and dressing of the wound is simplified. When the wound heals a very nice looking scar usually results, and finally the interference with the function of the arm isn't as great as it is following some of the other operations.

The incision is as follows: An incision skirting the upper margin of the breast, is made through the subcutaneous tissues, from a point at the edge of the sternum farthest from the growth and on the level with the nipple, to a point on the same level at the posterior axillary fold. Fig. 1. The skin is undermined from the incision to the clavicle and the head of the humerus and from the sternum to the posterior axillary fold, bringing into view the pectorallis major which forms the first layer of the anterior wall of the axilla. The clavicular is separated from the costal portion of the pectoralis major, and its tendons severed close to its insertion into the bicipital groove of the humerus. This brings us down upon the costocoracoid membrane and the pectoralis minor which forms the second layer of the anterior wall of the axilla. The index finger is pushed through the costocoracoid membrane and the tendon of the pectoralis minor raised upward and cut close to its insertion into the coracoid process of the scapula, being careful not to injure the long thoracic artery. Now by the help of a self-retaining retractor, a retractor held by an assistant a thorough exposure in easy access to the axilla is obtained. Fig. 2. The evacuation of the axilla begins from above and within and extends downward and outward. The costocoracoid membrane is cut near the clavicle, exposing the deep infraclavicular triangle. The axillary sheath is opened as near the apex of the axilla as possible and by gauze dissection is stripped from the axillary vessels from above downward and outward, clearing away all the areolar and lymphatic tissue surrounding the vessels and nerves. The branches of the axillary are now exposed at their origin where they are ligated once and for all preserving the acromic thoracic and subscapular. The fat and fascia surrounding the subscapular vessels is cleared away and the vessel retracted aside. Next the fascia and fat covering the Teres major, subscapularis, latissimus dorsi and serratus magnus is removed by gauze dissection being careful not to injure the external thoracic and the long subscapular nerves. This completes the evacuation of the axilla. The ends of the original incision are now joined by a cut which skirts the inferior border of the breast. Fig. 3. From this incision the skin is undermined to the lowest portion of the costal arch or lower if necessary. Through this incision the fascia covering the upper portion of the external oblique and the anterior sheath of the rectus may be removed if desired. The breast is turned towards the opposite side of the body, the origin of the pectoralis minor is severed, the perforating vessels are seized before their division, and

finally the entire mass including both pectoral muscles and the breast are removed by cutting through the costal origin and pectoralis major. Fig. 4. The wound is irrigated with hot saline solution and all oozing controlled, a drain is inserted with hot saline solu- with interrupted silkworm gut. Fig. 5. The drain is removed at the end of forty-eight hours and not replaced. The arm is not bandaged to the side but is left free to permit the patient to keep it in any position that affords her most comfort. Quite often at the end of a week or ten days the patient is able to place her hand on her head and at the end of a month she is able to use her hand and arm fairly well. Before leaving the hospital she is given the benefit of x-ray treatment in a final effort to destroy any tumor cells that may have been left at the time of operation. She may return for subsequent treatment if thought advisable by the roentgenologist.

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DISCUSSION

Dr. W. M. Scruggs, Charlotte: I think we ought to thank Dr. Tayloe for presenting the subject so ably to us today.

This incision was first brought to my attention by Dr. John Gibbons of Philadeplhia about three years ago. Prior to that time I had been using the Meyer incision, the incision that Willie Meyer used many years ago, and found it very satisfactory; but this incision has several advantages over that or over any other incision that I have ever used. Dr. Tayloe mentioned, I think, practically all of them, but there are two or three things about it that have impressed me in its use over a period of two or three years.

The first is from the surgical standpoint, it makes the technical part of the operation much easier. In practically all cases where I have any doubt I give them preliminary irradiation, deep x-ray therapy and then proceed with the operation in due time, and follow it up also with some deep x-ray therapy.

Another feature about this is the functional result you get following this operation. In the old operation where we made the incision which reached around almost to the point of the shoulder, there would be a formation there that would give you an impairment of function for a good many months. I think our experience has been, and I expect yours has been, Dr. Tayloe, that we have a probability of overcoming that functional impairment that we have been accustomed to getting.

Another thing is that you block immediately the lymphatic drainage in the first place, and in the second place you primarily ligate the blood vessels so that you have a better field to operate in and there is a great deal less loss of blood. You do away with a great deal of that old, cumbersome dressing that we used to have,

and after a day or two the patient has the use of the arm pretty well.

Cosmetically I think it is a great improvement over any operation that has been devised so far. Those of you who haven't used it I would certainly strongly suggest your trying it at least, because you will find it a great improvement over the incision that we heretofore had.

Secretary Long: Mr. Chairman, I do not want to discuss the paper, but I would like to say this paper by Dr. Tayloe, who is one of our junior candidate group, is an illustration of the value of that group, to let the young men come in in fellowship with us and give us their views.

He has taught us something for which we are grateful. I say, hurrah for the junior candidate group. (Applause.)

Dr. C. M. Strong, Charlotte: Mr. President, I have used that incision among others. I don't think any one incision is applicable to cancer of the breast because the situations are entirely different If you have a cancer high up on the breast or on either side, it does not suit so well, in my opinion.

I think you ought not to use any one man's incision exclusively. The main principle of the Stuart incision is all right, ligate your vessels and all that. Sometimes I think best to make an incision down here and then go around. It is practically a Stewart incision. The idea is good but I don't use any one man's incision in all cases.

Dr. S. O. Black, Spartanburg, S. C.: It happened that Dr. Stewart was one of my professors, and later my chief when I was a resident physician in the Jefferson Hospital in Philadelphia. I consider Dr. Stewart at the time of his death one of the premier surgeons of America. He himself was a rather remarkable young man. He came up almost from nothing, and after he got started, fate was kind to him.

At one time it threw him into the generous hands of Dr. W. W. Keene. Dr. Keene, in a measure, handed him down to Dr. Dacosta. Dr. Dacosta, a little later I think, in a measure put him in direct contact with Dr. John Gibbons, who is now doing such valuable surgical work at the Jefferson Hospital and College in Philadelphia.

Stewart did quite a lot of original things, and he did many ordinary things in a very original way. I remember that it was quite the exception for him to bring a regular assistant into the operating room for any procedure regardless of whether it was to be major or minor. In the presence of a large crowd of students and of graduate medical men I have seen him, single-handedly almost, do a hernia operation within a very few minutes—six or seven, perhaps, at the outside. He did a hernia while the average man was getting ready to make the incision.

This incision of Dr. Stewart's that Dr. Tayloe has so graphically depicted here, is one of the things of which he himself was the real originator. As Dr. Strong said, there is one objection to it; that is when the lump lies high in the breast. I have used it myself,

and when the lump is high it is rather difficult to get it; in fact, it is almost impossible to get it unless one sometimes carries the incision directly up toward the clavicle itself.

I wish to commend Dr. Tayloe for what he has said about not operating upon inoperable carcinoma of the breast. Whether it is due to the fact that a surgeon is anxious for the fee or whether it is due to the fact that he is making a desperate effort to do something to prolong the patient's life, the truth is that the average surgeon in the average hospital is almost always inclined to attempt the operation.

Dr. Tayloe is right. I believe if we let these cases alone and send them back home with the lump and with the cancer and with the nodules, they will do more toward hastening their women friends to come to the surgeon early than we can, because we can tell her, "Madam, you have waited too long; your case is hopeless; go home and tell your neighbor woman that the thing for her to do if she has a lump is to come immediately and not wait until the condition is inoperable." (Applause.)

REPORT OF A CASE OF SARCOMA OF TESTICLE

C. M. Strong, M. D., Charlotte

My object in presenting this case is two-fold: first, any discussion of the cancer question is apropos because of its apparent increase and the absence of any solvent remedy except in its early stages; second, on account of the age of the patient—7 months.

Of course, there are cases on record of infants having sarcoma, but one so young as the case I am presenting has not come under my observation.

There are, as we all know, two general forms of cancer: sarcoma of connective tissue and carcinoma of the epithelial or glandular tissue growths, sarcoma being found in young people and carcinoma in those of more mature age: sarcoma metastases principally through the blood and carcinoma by lymphatic channels. Sarcoma metastasis is often some distance from the original growth, while carcinoma is usually in the nearest lymphatic spaces and glands and by continuity. In carcinoma we can usually surmise where a recurrence will take place, but not so in sarcoma.

I recently had a metastasis of the liver from a melanotic mole on the leg, also a metastasis of the lung from an osteosarcoma of the knee. In each of these cases there was no evidence of any but local trouble, at the time of operation; in the former case metastasis appeared in about four months after operation and death followed in two months; in the latter case metastasis occurred within one month and patient died a month later.

When operating for carcinoma we try to remove all the lymphatic bearing areas then x-ray and radium give us some hope. In sarcoma, we remove it, hoping that the blood channel has not caught up any of the infected cells and deposited them in some remote and often vital part of the body, as the lungs, liver, etc., in which case

x-ray, radium, or any treatment which we know proves futile. In either sarcoma or carcinoma, of course, our only hope is in very early treatment, and even then, our prognosis should be guarded.

DIFFICULTY IN DIAGNOSIS

Sarcoma being of connective tissue usually originates in the deeper structures and being of a soft consistency, except in bone, is not easily diagnosed, since many other neoplasms give the same physical symptoms. Deep, sealed inflammations, tubercular lipoma, etc., deter us from diagnosis. We think of sarcoma as rare, when it is really comparatively common and I have been too often caught napping, but today I think of it among the first conditions of a growth, especially in the young. A rise in temperature and leucocytosis are found in sarcoma, thus adding confusion in diagnosis. Warts, moles, anginoid tumors and enlargement of bones are all potential sarcomas in the young.

Now to the case in question: the mother of Walter G., age six and a half months, consulted me about a growth of left testicle size of an English walnut, movable, rather soft and round contour and slightly painful on pressure. Family history negative. Mother had five other children all healthy. Father healthy. Child was rather robust and apparently healthy and of normal weight. Wassermann negative. Only symptom elicited was that child had become fretful and the mass in testicle seemed to be growing, the mother having first noticed this enlargement at age of four and a half months. By elimination we diagnosed this either sarcoma or tubercular, and in either case one for surgery. The operation was easy, there being no adhesions, and his recovery was uneventful. Four months have elapsed with no evidence of further trouble. The laboratory report was sarcoma.

The lessons I draw from this and other cases of cancer are as follows:

1.—None are too young to have at least sarcoma.

2.—Any suspicious growth may be cancerous.

3.—Early removal or treatment is our only hope of cure.

4.—Early treatment by removal or otherwise does not always assure a cure.

5.—Diagnosis protects the physician even in failure.

6.—Submittal of all neoplasm to laboratory is essential for an early diagnosis.

The above conclusions are especially true in cancer of testicle, as recurrence is very common, on account of the abundant lymphatic and blood supply and the fact that they both follow the cord; there may not be any involvement of inguinal glands even in carcinoma, and we do not expect them in sarcoma.

7.—Pain is a late symptom of cancer.

DISCUSSION

Dr. L. A. Crowell, Lincolnton: I think sarcoma of the testicles is a very rare condition. I have seen two cases. One was in a man

about 40 years of age; the other a man of about 21. I have never seen sarcoma in a person younger than that, so I think it is a very rare condition.

Dr. Strong, closing the discussion: I would like to thank the doctor for his lengthy discussion. (Laughter.) I didn't mean to convey the idea that sarcoma of the testicles was very common, for I think it is rare. The point I meant to bring out is that it is more common with me than I ever suspected it would be.

BONE TUMORS

C. S. Lawrence, M. D., Lawrence Clinic
Winston-Salem

To the average student the study of literature on bone tumors has been made difficult because of the lack of a uniform classification of this pathology. I know of no two text books or even two pathologists that agree on a definite uniform classification. The report of the Committee of American College of Surgeons on bone sarcoma headed by Dr. E. A. Codman, (The American Journal of Roentgenology and Radium Therapy, Feb., 1925) has presented a splendid classification of bone tumors.

Some idea may be had of the confusion that existed in the early days by the opinions registered by the following pathologists on a tumor, which now all agree is an osteogenic sarcoma.

J. C. Bloodgood—Periosteal myxo-sarcoma.
J. Ewing—Myxo-chondro-sarcoma.
F. B. Mallory—Osteogenic-fibro-myxo-sarcoma.
J. H. Wright—Osteo-chondro-sarcoma.
C. Y. White—Mixed cell sarcoma.
H. Fox—Myxo sarcoma.
W. C. MacCarty—Fibro-chondro-osteo-pseudotextoma.
A. C. Broders—Osteo-fibro-myxo-sarcoma.

The classification submitted by the committee follows:

1. Metastatic tumors of the bone.
2. Periosteal fibro-sarcoma.
3. Osteogenic tumors, (benign and malignant).
4. Inflammatory conditions.
5. Benign giant cell tumor.
6. Angioma (benign and malignant).
7. Ewings tumor.
8. Myeloma.

The committee hopes to establish these definite clinical entities as the essential divisions of bone tumors.

I wish to outline two cases in this discussion. First case falls in the classification of osteogenic tumors, non malignant.

Boy, age 13, admitted August 19, 1924. Chief complaint, tumor of upper end of tibia. Two years ago mother noticed small growth on his leg just below the knee joint (left), which has gradually grown until present, as large as an orange. He does not complain of pain but recently has been limping. Appetite

poor, has lost weight, never had a serious illness. Tonsils and adenoids removed six years ago. Had influenza 1918, no complications, no history of trauma.

Physical Examination: Pulse 80, resp. 20, fairly well nourished. Just below the left knee joint is a hard bony mass attached to the tibia. The tumor is size of an orange, not painful, feels like bone. The skin over the tumor is healthy, freely movable. The shaft of the bone is normal in outline, not painful. The joint is free from pain on flexion and extension.

The urine is normal. Blood count 3,320,000 reds, 9,400 whites. Wassermann, negative.

Operation 8-19-24. Removal of tumor including capsule and part of healthy shaft of tibia. The capsule was not cut into. 8-30-24 discharged from hospital, wound healed, condition good.

Dr. J. C. Bloodgood was consulted in this case. He writes the x-ray has all the appearance of a benign exostosis, but I advise complete excision without cutting into the tumor and chiselling the base with a large piece of normal tibial bone. At his request the specimen was sent him. His report follows:

The gross specimen looks exactly like the tumor springing from the midial or inner side of the upper end of the shaft of the tibia below the epiphysis. In looking at the tumor in the x-rays we ask ourselves whether cartilage is present, I don't know whether I can answer this from the x-rays only. But when we look at the specimen we find cartilage on the surface, just the same as we have cartilage on the joint end of the bone. On top of the cartilage is a connective tissue membrane which we can strip back, which we do not have on joint surfaces. But sometimes fluid forms between this connective tissue and cartilage producing a bursae, giving rise to a soft part tumor called exostosis-bursata. On making section through the bone there is cancellous bone on epiphysis with no evidence of cartilage. This is the true exostosis.

MICROSCOPIC REPORT

(Section 1) Periphery of tumor showing cartilage and hemorragic bone marrow. First we see cartilage. Then as we move the section we see cartilage in which ossification is taking place. Then deeper bone in which there is some cartilage. The bone marrow is very cellular and takes an eosin stain, contains a large number of bone marrow cells and blood.

(Section 2) Fatty bone marrow beneath hemorragic bone marrow. Here we see spicules of bone in which there is no cartilage. Then we see fatty bone marrow in which there are no cells.

(Section 3) Shaft of tibia beneath tumor. Here we see dense bone and in between the bone, fatty bone marrow and in this fatty bone marrow islands of cells surrounding the capillaries. There is nothing suggestive of malignancy in any of the sections.

April 10, 1925. Examined. Bone smooth, no enlargement or evidence of recurrence, general health good.

The tumor here described is a benign osteogenic tumor. The point is, if the tumor is not carefully removed without cutting into

it and leaving a portion of the capsule it will recur at the site of operation.

The second case, Periosteal sarcoma. White man, age 26, by occupation a farmer. Father and mother are both living and in good health. One brother and two sisters, living and well. Comes to the Clinic complaining of rheumatism. His present illness dates back three months when he began to have pain in the left thigh just above the knee joint. This pain has been much worse at night, causing him great loss of sleep. He has lost weight and his appetite is poor. History of childhood, diphtheria when a boy. Pneumonia in 1919. He has always been constipated.

Physical examination. Temperature 98.2. Normal weight 140 pounds, present weight 125 pounds. Pulse rate 78, char. good. B. P. S., 110, D. 58. Respiration rate 18, regular. A poorly nourished white man showing signs of pain. The mouth shows many crowned teeth, and general poor hygiene. Tonsils are large, cryptic and contain pus. Other findings; normal, except the lower end of the shaft of the femur reveals a thickening which is slightly tender on palpation and feels bony. The mass is symmetrical, that is extending around the shaft of the bone. There is no redness of the skin, no heat, and very little pain on palpation, there is no involvement of the joint and he is only slightly hampered in walking.

Laboratory findings: Urine amber, alkaline, 1020. Mucous shreds, no albumen, no sugar, few pus cells and few hyaline casts. Blood Wassermann negative. Blood count, W. B. C. 13,900, Heg. 85%, polys 50%, small m 28%, LM 19%, Eosin 2%.

X-rays of head, chest and all bones show no metastasis. There are many abscesses at roots of teeth.

August 5, 1924. All teeth showing pus extracted, tonsils removed.

Dr. J. C. Bloodgood: The palpable tumor you describe as encircling the shaft is apparently larger than the new periosteal bone formation in the x-ray. This is very suggestive of sarcoma. Dr. Kahn and I have just had a case similar to this which has reacted favorable to x-ray treatment.

Prognosis: Dr. Bloodgood states that the chances of a cure of this case, at his age, by amputation is very small, and I think we are justified in trying the x-ray first.

September 4, 1924. Marked erythema over lower half of thigh, tumor reduced in size, at least one-half, by palpation. Sleeps well, appetite good, no pain day or night. His general appearance shows improvement.—C. S. L.

In my last case of periosteal sarcoma, Oliver, which we submitted to x-ray treatment he had a tremendous skin reaction. The soft part tumor broke down, discharged necrotic material and piece of bone, healed, disappearance of tumor. So one must push x-ray.—J. C. B.

X-RAY TREATMENT RECORD

8-5-24 to 11-5-24, MA 5—K. V. 180-200. Filter ¾M. copper & 1-A time 15-20 M. Distance 50 cm. front and back. Patient did well from Aug. 5, 1924, when treatment was started until Dec. 1, 1924, having gained six pounds in weight, free from pain, slept well. The bone tumor had reduced in size.

About Dec. 1st he began to go down physically, headache being chief complaint. A little later diplopia, then choked, disc. irregular pupils, vomiting, rigidity of muscles, this condition of affairs grew worse until death Jan. 17, 1925, seven months after the first symptoms and four months and twelve days after diagnosis and treatment started. This man was a very active farmer, hard to control. He only remained in the hospital four days with all our advice to remain quiet, he continued his farm work. I believe from the evidence of his early and rapid improvement that if we could have kept him quiet in the hospital that metastasis to the brain might not have occurred. Dr. Cooke, my associate, and I drove ten miles to the home to get an autopsy but we were refused. We did examine the leg frequently during his illness and at death, and we are quite sure that the bone tumor had reduced in size.

DISCUSSION

Dr. W. Marvin Scruggs, Charlotte: There is very little that I could possibly add to Dr. Lawrence's paper on bone tumors. He has added just a little to the classification, possibly, of bone tumors as it has been given to us according to the new standard of this committee, but I think possibly the most important thing for us from a clinical standpoint is the recognition at an early date of whether or not we are dealing with a benign or a malignant condition.

My experience with bone tumors has been confined as far as I know—I possibly have seen some things that weren't recognized—to the simple adenomatous and, on the other hand, to some cases of sarcoma that I have seen.

The cases of sarcoma, which have been so recognized, have all died, regardless of what treatment we gave them. Dr. Lawrence, and I think if we can inveigle Dr. Crawford into talking to us a little bit—he has had a pretty wide experience with their clinic—his experience will possibly bear out what Dr. Lawrence has said and what my experience along the same line has been. Regardless of what treatment you give these people they eventually die.

The question has recently been brought up by Dr. Cooley in New York, who possibly has seen more cases of sarcoma of the bone than any man in this country, because they flock to the Memorial Hospital there, and unfortunately a great many of them are hopeless. Dr. Cooley in a recent paper upon this very important subject reported 15 cases of benign giant cell sarcoma. His conclusions were briefly this: That all the cases that come to their clinic that are suspicious of sarcoma they subject to first irradiation, and then to operation. They do a thorough curettement of the infected area. They pack this wound with iodoform gauze for a few days, then remove this gauze and imbed in there radium tubes.

The objection, as I have seen, to implanting radium tubes in the bone is that practically all of those cases later become infected. Just why that is I don't know, but nearly all of them do. It either sets up a necrotic condition or infection is unintentionally carried in.

He says, then, if they tend to improve under this treatment that they continue their irradiation. If they show signs of not im-

proving then they subject these cases to radical operation. Some of the cases have lived over a period of a good many years but practically all of them have died. That is about the sum and substance of these sarcomatous conditions.

As far as carcinoma is concerned, I don't believe that I have ever seen a true case of primary carcinoma of the bone. Practically all of these cases are of metastatic origin.

Now the cases of angioma have been reported. I personally have never seen a case, but from all the pathological studies I have followed and all the literature that I have read on the subject, the conclusion possibly is that these angiomatous conditions are really nothing more nor less than the vascular type of sarcoma.

So the question just resolves itself into the conclusion that Dr. Lawrence has wisely reached—that conservatism is probably the key word in the treatment of these cases. If they are not sarcoma, they get well. If they are sarcoma they may respond to treatment for a while, they may respond to x-ray therapy, they may respond temporarily to big doses of radium, but they will pop out somewhere and eventually will result in death in most cases. (Applause.)

Dr. R. H. Crawford, Rutherfordton: Mr. President, the subject has been covered pretty well, but I would like to ask a word about bone tumors, sarcomatous tumors. We find at the Rutherfordton Hospital, if certain of the diagnosis, that irradiation with radium or the implantation of bare tubes, the tumor mass can be decreased and sometimes diminished altogether if a sufficient amount of irradiation is given, but in time the masses will recur at different places in the body and the end result, as Dr. Lawrence told you, is the same in all of these cases. However, radium will help a great many of them to live longer and perhaps to relieve pain.

There is a question I wanted to ask Dr. Lawrence. Just recently we had a case in which sarcoma was suspected. It was a very small tumor mass. The x-ray plate showed well, but the patient had pain just above the ankle joint in the tibia. The diagnosis was not certain from the x-ray study, but we cut down on this tumor mass. The periosteum looked healthy. I went through the periosteum and found a bone cyst, a simple cyst about the size of an English walnut. It could be enucleated, and was easily. This man has had an uneventful recovery.

Has Dr. Lawrence seen cases similar to that in his experience?

Dr. A. A. Kent, Lenoir: I have had some experience, sir, as a general practitioner with these troubles. The question has been raised in my mind as to whether or not amputation does not prolong the life, and if so does it prolong that life sufficiently long to justify the operation?

The first case of the kind that I had was a patient that I had treated some ten years prior for syphilis. The man developed a bone tumor on his arm. Naturally I first presumed that it was a syphilitic condition, but it positively refused to yield to any kind

of syphilitic treatment. The man suffered very intense pain with this small tumor, half the size of a hen's egg on his right arm.

I made a diagnosis of malignant tumor of the bone and amputated about the middle of the arm. Some four months later the same trouble developed in the stump. I then amputated at the shoulder joint. The man made good recovery and lived a well man, apparently, for two years after that amputation.

Then by accident he received a very severe blow over the right lung, and then developed what I believe to be sarcoma of the lung due to metastasis, and died from that.

I am confident that the amputation at the shoulder joint was well worth while in that man's case and that the amputation should have been made primarily at the shoulder joint instead of at the middle of the arm.

Some three or four years ago I had a young woman who was brought to me with an enormous tumor just above the right knee. It was a bone tumor, very painful. She had been treated for rheumatism before the tumor was of any consequence; later by another with massage and steaming and every sort of local application for rheumatism.

When she was brought to me I made a diagnosis of malignant tumor of the bone, sent that woman to the Johns Hopkins Hospital. An amputation was made at the middle of the thigh bone. She returned to me with the wound not yet quite prefectly healed, but it very soon made perfect recovery, an artificial limb was furnished her, which was not of very great service but still she did use it.

That woman became a perfectly healthy woman to all appearances; she grew to be strong, fleshy, fullblodded, a rugged looking woman. She gave birth to a child in which I attended her, and she was still a perfectly healthy woman. Some months after giving birth to the child she contracted influenza, and while in bed with influenza she suddenly was seized with a convulsion and died, as I think, sir, (because there was no autopsy made) from appoplexy. But mind you, the woman had lived for two years apparently in perfect health after this operation had been performed at the Johns Hopkins Hospital.

Now those cases would seem to me to justify amputation.

Later I saw a man who had a bone tumor of the arm. It brought to my mind the fact that some 20 years prior to that I had seen his father with apparently identically the same condition, only it had reached such an extreme condition that it was hopeless to undertake to do anything, and two or three months after I had first seen the father he died with this condition.

When the son came to me I recognized it as the same condition that his father had and from which his father had died. I advised him to go to one of the hospitals in Charlotte. I don't know whether he went to you, Dr. Strong, or not. The arm was amputated in Charlotte. He came back home and in a very brief while after that amputation—it was a middle arm amputation, not a shoulder joint

amputation—the trouble recurred in the stump. I advised him to return at once to the hospital, which he did, but he came back home in a very few days, saying that the hospital surgeon, whoever it was, had advised against further operation, and in some two months from that time this young man died.

Now it would seem that it was not the thing to do the amputation, but in the other two cases unquestionably it was the thing to do. In the case of the woman it restored her to health for a time, and in the case where I did the shoulder joint amputation it prolonged the life of the man. (Applause.)

DR. LAWRENCE, closing the discussion: I would like to ask Dr. Kent if he knows what the pathological diagnosis was on the amputation at Johns Hopkins?

DR. KENT: It was osteosarcomatous. I gave the name of the lady because the record is kept there and of course can be found. I do not remember the exact date, but I can obtain that for you if you would like to know. That was the pathological diagnosis and they proceeded to amputate at once while she was there. I didn't accompany her.

DR. LAWRENCE: The most interesting thing to the patient, of course, is the proper diagnosis in bone tumors. In this case that I showed I asked Dr. Bloodgood, "Doctor, how do we know that is sarcoma?" He said, "We don't know it absolutely, but all the evidence that we have thus far tells us that it is sarcoma. The only way to tell beyond any doubt as to what the cellular structure of the growth is is to cut down on it and take a piece of it and examine it."

That is what Bloodgood and those fellows advocate where you operate—that is, to have a group of men who are capable of diagnosing these tissues at the operation, and remove a specimen and examine it at that time and base your surgical treatment on the report of the patholigist, ok'd by the surgeon.

In regard to cyst: Under the new classification, cysts are considered in the inflammatory type of tumors—all cysts and inflammatory conditions such as Padgett's disease and Von Rickenhouse's disease and syphilis and tuberculosis.

In those cases where young folks have cyst of the bone, they accidently break their legs. They get well very quickly. After that experience the men who have done most work in this line of pathology cut down on the cyst and crush it and scrape it out; it fills up and gets well.

I want to quote here from a paper of Codman in discussing the new classification of bone tumors. He says:

"I would like to stress the point that central tumors of bone which are not metastatic or multiple myeloma are seldom malignant. For all intents and purposes the person who presents himself with a bone tumor which is not inflammatory or metastatic may be told that he has one of five tumors.

"1. Periosteal fibro sarcoma. The prognosis is fair with complete recovery. There is only one case on record that has ever been cured.

"2. Benign osteogenic tumor. Prognosis excellent, with radical excision.

"3. Osteogenic sarcoma. Prognosis bad, no matter what its treatment, although a few cases of recovery following amputation are on record. A few cases have been cured by amputation. Out of, I think it was sixty cases that Bloodgood reported a year or so ago, there were two cases that lived beyond six years. Sixty amputations, two lived beyond six years! Of those two that lived beyond six years one died after the sixth year of metastasis in the lung, and the other one is still living at this time.

"4. Benign giant cell tumor. Prognosis good under almost any treatment except bad surgery.

"5. Ewing's tumor. Prognosis good for immediate reaction to x-ray treatment good, but eventually bad; but in all these cases of Ewing's tumor they later on metastasized and produced death." (Applause.)

REPORT OF AN INTERESTING HEAD INJURY CASE

Russell S. Beam, M. D., F. A. C. S., Lumberton

The cause of death occurring within a few hours to several days following a head injury is, in the majority of cases, due to exhaustion of the centers at the base of the brain caused by increased intracranial pressure. The intracranial injury may be so extensive in some of the cases that the primary condition of shock may merge directly into one of exhaustion of the medullary centers, and the only hope for such cases will be in early removal of the compression even though the patient has not entirely recovered from shock. However, such a procedure should be undertaken only after one has made sure that his patient is not going to react, and to determine what cases will come in this class is, of course, a very difficult matter, and one that I will not discuss further than to say that the type and extent of the skull fracture will be very little index to the seriousness of the injury to the intracranial structures. The following cases illustrates several interesting points in the most seriously injured cases:

M. D. S. A man 29 years of age, on Dec. 11, 1924, fell from the fifth floor of a building under construction to the ground, a distance of 52 ft., striking his head against a steel beam on the second floor. He was admitted at once, at 8:00 a. m., to the Baker Sanatorium in a very serious condition. His pulse was 160 to the minute and almost imperceptable, breathing was rapid and shallow and his skin was cold and clammy. He was unquestionably in an extreme state of shock. He was given very vigorous treatment for shock and I saw him at 1:00 p. m. At this time his pulse was 130 to the minute and of fair volumn, his breathing was slow and irregular, pupils were contracted and there was extreme outward rotation of the right eye. He was in deep coma and the only movement was a slight twitching of the right arm. He had an

irregular scalp wound in the left temporal regions about ten centimeters long. The wound was filled with clotted blood and brain tissue and I was informed that brain tissue was running down the side of his left cheek when he was admitted to the hospital. Though the patient had not entirely recovered from shock I decided to operate at once under very shallow anesthesia. This revealed a very extensive compound, comminuted fracture involving the left temporal and frontal region, branches from which ran for some distance in different directions and one of them running across the floor of the anterior fossa. Large fragments were severely depressed and several small fragments were driven from two to three centimeters into the brain tissue. The brain tissue of the front portion of the frontal and temporal lobes was horribly pulpified and there was profuse bleeding from the anterior branch of the middle meningeal and other meningeal and cortical vessels. The bleeding, however, was being partially controlled by pressure from depressed fragments of bone. The depressed and indriven fragments were quickly removed, vessels were ligated and macerated brain tissue and clots were removed. The torn dura was closed with continuous catgut sutures without drainage, and several layers of plain gauze were placed between the inner plate and the dura, the ends being brought out through the lower angle of the wound to act as a drain. On account of the nature of the injury, none of the fragments were replaced. The scalp wound was closed with interrupted silkworm gut sutures. At the end of the operation, which had taken only twenty minutes, the patient's condition was only slightly worse than at the beginning, his pulse having gone up to 140 to the minute and his breathing to twenty-five. He slowly regained consciousness and could be aroused with only slight difficulty at the end of 24 hours. His pulse gradually came down during the first twenty-four hours, but on account of a very virrulent infection beginning in the left forearm, where he also sustained a compound fracture, it did not get lower than 110 until several days later. His mental condition gradually improved and his mind was fairly clear at the end of seventy-two hours. The packing was partially removed on the third day and completed on the fourth. At this time there seemed to be an unusual amount of bloody serum discharging from the wound and the dura was slightly distended. On the following day this bulging had increased and the sutures were removed, following which there was a very free discharge of cerebro-spinal fluid which, apparently, was coming from the lateral ventricle. A wick of plain gauze was inserted into a small fistula which was discovered leading in the direction of the ventricle, and while this increased the flow of cerebro-spinal fluid, it was not sufficient to maintain an equilibrium between the amount of fluid secreted and that discharged through the fistula, with the result that the brain gradually distended untill by January the first, of this year, there was a large cerebral hernia projecting through the wound. Obviously, there had been a complete obstruction of the foramen of Munro. Having failed by other means in regulating the flow of cerebro-spinal fluid, the drain was inserted directly into the ventricle on January sixth, with this very interesting observation: There was a complete evacuation of the ventrical followed quickly by a severe and prolonged chill, the temperature rapidly rising to 103 and the pulse was rapid and weak. There was severe and continuous headache and the patient appeared to be in a state of extreme exhaustion. The drain was immediately removed, but apparently all obstruction to free discharge from the

ventricle had been removed, and it was several days before the pressure within the ventricle could be regulated and brought back to normal. All this time the patient's temperature fluctuated between 100 and 103, and his pulse from 110 to 120. He complained, also, of severe and continuous headache. Finally, by the end of the fourth day the flow of cerebro-spinal fluid was controlled by pressure with layers of gauze, and the pressure within the ventricle again became normal with an immediate disappearance of the constitutional symptoms. However, on January 13th, while attempting to measure the daily secretion from the cavity, I unintentionally allowed a second evacuation of the ventricle with exactly the same constitutional symptoms as on the first occasion. These symptoms disappeared as the chamber refilled and his pulse and temperature were normal again in a few days. His condition continued with very little progress until the first of February. At this time the drainage from the fistula became less and it was entirely dry by the tenth. The skin wound closed by granulation and he was discharged on March 20th.

DISCUSSION

Dr. J. D. Highsmith, Fayettesville: Gentlemen, I think Dr. Beam should be congratulated upon the wisdom he showed in handling this case. Practically all of these cases of compound, comminuted fracture of the skull are infected in spite of the most rigid aseptic and antiseptic precautions. There didn't seem to be any infection in the doctor's case.

These cases of compound, comminuted fracture of the skull should all be operated upon immediately, pieces of torn and bruised and contused scalp, bits of bone and torn tissues being removed immediately in order to prevent infection. This should be done sometimes in cases that show a great deal of shock. This practice, however, should not be carried out in cases that are not compound, comminuted.

I think Dr. Beam is correct in his statement that there was a complete obstruction in the foramen of Munro. This, I believe, was due to increased intracranial pressure, caused from edema and congestion of the brain.

Puncture of the corpus callosum is sometimes practiced in order to restore a normal condition of the cerebrospinal pressure. The doctor carried out this practice in his case when he introduced the drain into the lateral ventricle. This established a new communication between the ventricles of the brain and the space, and I think that his excellent result in this case was probably due to this new drainage established.

In all probability the rise in temperature following the insertion of the drain in the lateral ventricle was due to stirring up of some of the latent areas of infection in the brain tissue, or probably the meninges. This, however, may not have been the case. The elevation in temperature may have been due to the shock from the sudden release of the increased intracranial pressure.

Thank you. (Applause.)

Dr. Thomas M. Green, Wilmington: The question of treatment of brain injury is one that has been changed a great deal in the last ten years. What we know about it today we owe to that small group of men, the neurological surgeons. Most of our textbooks tell us that brain cases get along just as well with a nightcap as they do with an operation, and most of them give a mortality of something like 68 per cent.

In recent years that mortality has been reduced to 17 per cent, and only 35 per cent of the cases need operation.

The question of treating a brain case is largely a question of whether an operation is indicated or not, and if it is what is the best time to operate. Many brain cases need no operation at all. The one case that the doctor mentioned decompressed itself.

For instance, a case is brought in in a condition of shock. It is not quite fair to that man to operate on him while he is in shock. It only adds more shock to his already shocked condition. If he can pull out of his condition of shock, well and good; but if he cannot pull out of it, his injury was fatal from the beginning and no operation will help him.

As soon, however, as he begins to react from his condition of shock, then it is in order to put him through certain investigations upon which we are going to base a treatment. The thing upon which all the treatment should depend is intracranial pressure. If the skull is fractured and there be no intracranial pressure, there is no reason for operation except to raise the depressed fracture, all of which should be raised for fear of epilepsy being produced in later years.

The question then revolving around that point of intracranial pressure leads us to certain investigations. One, for instance, is the lumbar puncture, and measuring the actual pressure with a manometer. That is not difficult and can be done easily.

Another question does require, unfortunately, in many cases the association of an oculist.[3] That is the condition of the eye ground in the disc, but in rapidly progressing cases the eye ground changes come so slowly that it is not well to wait until we develop them. Our plan of treatment is as soon as a man begins to react, his rapid pulse comes down slowly, respiration begins to get slow, he is given a two-hour observation by the nurse. If his respiration is as slow as 16 and his pulse gets below 50, why then we are ready for some very definite investigations; that is, the actual measuration of his intracranial pressure with a manometer.

If that pressure is above normal—say ten points in an adult—we let the fluid out until it becomes normal. Because of so much blood it may not pass freely through the needle. The lumbar puncture then becomes useless and we have to resort to a cysternal puncture.

If we cannot control the intracranial pressure by twelve hour withdrawals of fluid in reducing it to .10, then we have to resort to the decompression operation, which should, if possible, be done on the same side as the depressed fracture because we might be able to

first, after doing the decompression, raise the compressed bone; but no depressed fracture should ever be attacked if the pressure is above normal, until first a decompression has been done.

In doing so you remove the bone and lacerated cortex is forced out by this increased pressure and you lose much brain substance and do much more damage than you can possibly do good.

So first do the decompression operation, and allow the fluid to exude through the wound, and after you close it with a drain then remove the decompressed bone and drain, if necessary.

Of course one danger always, as the doctor had in this case, is the question of infection being carried in at the point of the depressed fracture. I recently had a case that I lost just that way. The man developed meningitis later and died in that manner.

There are a number of little points that are very interesting in brain injuries. The drain never should be left in longer than 12 hours. You lose the fluid so fast until the brain becomes dry and the brain settles so that the medulla sinks down, with a rapid rise of the pulse and temperature and ultimate death.

We try to overcome that by marked elevation of the feet almost at an angle of 45 degrees.

Sometimes one decompression is not enough. We cannot keep the pressure down and we have to do a decompression on the other side.

There is one occasion when the decompression is in order, probably, without waiting for anything more than one lumbar puncture in determining a very high intracranial pressure. That is where we have a hemorrhage that is producing clot around the base of the brain. In that instance a decompression should be considered early. However, we never attempt any examination or treatment until the patient has come out of his original condition of shock. (Applause.)

Dr. Horace M. Baker, Lumberton: Mr. Chairman and Gentlemen: In regard to this series of cases which Dr. Beam has so ably presented to you, I feel that we have here a contrast of two classes of cases. The first case of the man who fell from the building gives you the type of case for immediate operation. On the other hand, the second case which Dr. Beam reported to you gives you the case of waiting and observing and using instruments of precision, as the doctor has just explained to you, which he did.

In this case, however, the x-ray did not reveal the fracture at the base, so that considerable study and waiting was done. The symptoms increased and the improvement was not satisfactory, so Dr. Beam operated.

I believe in these cases often times we cannot depend upon our instruments of precision too much. I believe that our clinical judgment and experience in the matter should govern us to a very great extent.

These cases did remarkably well and I feel that Dr. Beam should be very greatly complimented on his success with them.

Dr. A. E. Bell, Mooresville: No one thinks of operating on a case in a state of shock, but in the case of a head injury, the shock is due to the violent injury to the intracranial structures, and in the majority of cases to severe compression; and under a very shallow anaesthetic and a quick operation you can often do more to relieve your state of shock by relieving that compression than to treat him for a long time with drugs, hot water bottles, etc. That has been my experience in a few cases.

Now when it comes to tapping the spinal cord and using dehydration, magnesium sulphate, sodium chlorid, etc., this has its application and I use it in some cases, but it is more applicable to those cases where the increased intracranial pressure is due to edema and should be used when you are unable to diagnosticate the exact injury and its location, but it is not going to suffice where you have a large clot weighing several grams inside the skull cavity as occurred in this case of the fracture at the base.

Now in case of drainage, of course it is not my practice to leave drains in for several days, but in these cases where the fracture is extensive, branches radiating out in different directions, there is often not profuse but gradual and continuous bleeding from small emissary vessels and small vessels of the meninges.

By applying this pressure with a few layers of gauze beneath the inner plate, between the inner plate and the dura, completely encircling the fracture, you can control that bleeding. It might be possible to remove it earlier, which I would do if I thought it was safe, but I am sure it is always safe, as far as bleeding is concerned if you leave it in from two to three and four days. (Applause.)

It was voted that a daylight screen, which would cost about $80.00, be purchased for the use of the section.

The meeting then adjourned.

MONDAY EVENING SESSION

April 27, 1925

The meeting of the North Carolina State Section of the American College of Surgeons convened at 8:20 P. M., Dr. A. M. Whisnant presiding.

SOME FUNDAMENTALS IN THE DIAGNOSIS AND TREATMENT OF THYROID DISEASES

Foy Roberson, M. D., Durham

The question of disease of the thyroid gland covers some of the most interesting work in surgery and medicine, as you gentlemen of course, know. The thyroid controls practically every tissue in the body. I have only to call your attention to the changes that take place in diseases of the thyroid gland, in exophthalmic goiter, adenomatous goiter, cretinism, myxedema and various other diseases caused by disease of the thyroid.

One of the most striking things in studying thyroid literature is the variation in the way that the different men classify thyroid diseases, but it strikes me that probably the most satisfactory and most lucid classification is that of Plummer which classifies them into adenomatous goiter without hyperthyroidism, adenomatous goiter with hyperthyroidism, simple colloid goiter, cretinism, struma, thyroiditis, malignant diseases of the thyroid, and exophthalmic goiter.

Now just briefly to go over the most important ones in this classification: I take it that some of us do surgery altogether and some of us do general practice. In what I have to say I will try to make it interest the men who see these cases before the surgeon does as well as the man who has to treat them surgically.

First and probably the most common type of goiter that we see is that of the simple goiter, adolescent or colloid goiter. It comes under these three different names. The condition that is seen near the second decade in life, or beginning with the third, is characterized by simply a diffuse or symmetrical enlargement of the thyroid gland. There are, as a rule, no general constitutional symptoms.

The follicles in the thyroid gland are simply loaded with colloid material, and the condition is probably due to a lack of enough iodin. The simple goiter or colloid goiter is seldom a surgical condition. As a matter of fact, occasionally some of them are operated upon. They should not be. In such a case there is danger of producing a condition of hypothyroidism. Practically all of these simple or colloid goiters are amenable to iodin treatment, of course under the supervision of the medical man.

Probably the next most common type of goiter that we find is the adenoma, the simple adenomatous goiter, which is simply an encapulated area, or encapulated areas of follicles, either of the fetal or adult type. There are new follicles of the fetal type because we often see them in children that have existed almost from infancy.

I have recently operated upon three members of the same family with very large adenomatous goiters of the simple type without hyperthyroidism. Of course adenomatous goiter of the simple type is purely a surgical condition. I might say that it is a condition that should be treated early surgically because we can almost say with a degree of certainty that, given a patient with a simple adenomatous goiter, in a period of eight, ten or twelve years that patient is almost sure to develop toxic symptoms.

That is a type of case we see so often—people who have gone for years and years with a great big goiter and they have been told and advised to let it alone; if it does not hurt them it will never give them any trouble. Of course we know now that such advice is wrong because, as I say, that type of goiter is almost sure eventually to cause viceral and circulatory changes that are fatal if not treated.

The next type of goiter is the adenomatous goiter that has existed and has become toxic, or adenomatous goiter with hyper-

thyroid symptoms. Here we have a patient who gives symptoms of having had a goiter for a number of years; she begins to be nervous, short of breath and develops circulatory symptoms, nervous symptoms, symptoms of high blood pressure and all the various symptoms that are familiar to you gentlemen in the adenomatous goiter of the toxic type.

The next type of goiter that interests us most (and of course the most serious type) is the exophthalmic goiter. Exophthalmic goiter is characterized, as you all know, by at first very mild nervous symptoms, and as the condition progresses the patient becomes extremely nervous and develops a very rapid pulse, loses weight, has certain symptoms and becomes extremely ill. Now this type of goiter is the type that needs careful consideration.

In this connection I am reminded of the work that has recently come out in the last two or three years that has been done by Plummer, who has found that iodin is good in exophthalmic goiter. It has not been so long since we thought that iodin was absolutely contra-indicated in exophthalmic goiter, but we know now that iodin is not only indicated but is absolutely life-saving.

As a matter of fact, it seems true that iodin in the form of Lugol's solution is almost destined to do away with the necessity for preliminary ligations in the case of exopthalmic goiter.

You are all familiar with the patient who comes in with a marked exophthalmus or rapid pulse or who is extremely nervous, so nervous that she can hardly stay in bed, sometimes nauseated, with all of the symptoms of exophthalmic type of goiter and extremely ill. With this type of patient it was sometimes necessary to do one or more ligations, but now, you see, these patients come in in a crisis, desperately ill. These patients can be given doses of Lugol's solution, ten drops three times a day, and it is almost like magic the way the metabolic rate will come down, the way their nervous symptoms will subside and the way the pulse rate will drop. Patients who heretofore died before they could be relieved surgically can now be gotten into a remarkably safe condition for operation.

Another thing that iodin is doing for this class of case is that after operation, while we don't have hyperthyroid reactions as often as we did, should a hyperthyroid condition develop, doses of Lugol's solution given by the rectum will often make the condition subside right away.

So probably the greatest contribution to the treatment of diseases of the thyroid gland in the last few years has been the fact that it has been found that iodin is really helpful in these conditions.

One point that I failed to mention in regard to the differentiation, the thing that concerns the medical man mostly, between the simple or colloid goiter and the exophthalmic type of goiter is the question of metabolic rate. As you know, the metabolic rate is simply the comparison of the rate of metabolism in an individual compared with a standard, just as we take the temperature of an

individual, or the blood pressure of an individual, or pulse rate and compare those by a standard.

It is generally conceded that a variation of twenty degrees is not too much either way. However, in cases of simple or colloid goiter sometimes you will find a patient who is extremely nervous, probably of the neurasthenic type, who has tremors and may be a fast pulse, with a diffused, symmetrical, enlarged goiter.

There is no way to make an early diagnosis or positive diagnosis in this type of patient except by the estimation of the metabolic rate. In the colloid goiter the metabolic rate is normal or low. In the exophthalmic type it is increased.

These points, of course, are fundamental and the things that we come in contact with every day and are points that all of us are interested in, because it is absolutely essential in dealing with diseases of the thyroid gland to know just what type of goiter we are in contact with, whether its condition is amenable to medical treatment or whether it is a condition that is amenable to surgical treatment.

The condition of cretinism is of course medical. Struma is a condition that may develop sometimes as the result of an operation, where a surgeon has operated upon a patient for simple colloid goiter, has removed the parathyroid and the patient develops a condition of hypothyroidism. Struma may develop following cases of thyroiditis. From a diffused or inflammatory condition of the thyroid gland following influenza or tonsolitis or some infectious condition, the patient may develop thyroiditis, and as a result there will be a contraction of the tissues of the thyroid gland, the connective tissues, so that there may be a condition of struma, just as we would have if the patient has had too much of the thyroid gland removed.

Now just a few words about the surgical treatment of the thyroid gland. As we have said, with colloid goiters it is not usually necessary to operate; in fact practically all of them are amenable to medical treatment. In instances where one has a large goiter that is causing pressure for some reason that is well thought out it may be necessary to do a partial thyroidectomy.

Of course in the case of adenomatous goiter an operation should be performed. As far as I know there is no medical treatment. The operation is very safe. Patients with adenomatous goiter without toxic symptoms have no constitutional symptoms from the goiter. It is very simple and safe to remove the adenomatous goiter.

In the case of adenomatous goiter with toxic symptoms there is a different story. Very often one has a patient with marked circulatory symptoms, degenerative conditions of the myocardium or kidneys, but right here I would like to call your attention to a thing that you have probably noticed. That is that patients with myocarditis as the result of adenomatous goiter with hyperthyroidism have transient myocarditis. It is remarkable to see these patients who have gone for years with goiter and who have developed toxic symp-

toms, their hearts going all to smash, practically come back to normal so far as the heart and everything else is concerned after the removal of that adenoma.

With reference to the operation itself: The work that we do has been simplified for us and made easier and safer for the patient on account of the work that has been done by the Plummers and the Mayos. Their work in goiter is colossal; they have studied it and written about it, and we have read about it and studied about it until we are able to do things for our patients now that a few years ago we would not dream of doing. As far as the technical points in the operation are concerned, we are all familiar with them and I have nothing new to offer.

Personally, I try to leave about one-tenth of the gland. Of course I try to leave the parathyroid. Occasionally it is necessary to cut the muscles; more often it is not necessary. The types in cases in which I feel I ought to do that are the exophthalmic types. However, as a rule it is not necessary to cut the muscles.

As far as the anaesthetic is concerned, most goiters can be done with local anaesthesia, probably combined with gas or with ether, but that is more or less of a personal equation. A man does what he has the best success with. (Applause.)

DISCUSSION

Dr. William Sprunt: Mr. President, I think this paper is extremely timely, particularly on the diagnosis of goiter. Living as I do on the edge of the so-called goiter section, it has been my privilege to see quite a few cases of goiter in the last few months, most of it coming from the surrounding country back up in the mountains.

To me the important thing about them has been the way they have not been differentiated. A goiter has been taken as a goiter. A good many people have read that iodin is good in goiter, and it has been given indiscriminately. It is a question in my mind at times whether more harm has been done than good in using iodin in exopthalmic goiter.

In the adenomatous goiter, without hyperthyroidism, (you frequently see those cases that come to you) they either get Lugol's solution or some sort of iodin ointment to rub on their necks. If let alone they at best will have usually about 13 years from the time of the appearance of the adenoma before they will have any symptoms of hyperthyroidism; but by giving them iodin a condition of hyperthyroidism has been initiated which is not removed by stopping the iodin. Once hyperthyroidism has been initiated there is not anything to do but to go ahead and take out the glands.

I thoroughly agree with the doctor that all adenomatous goiters should be operated upon; for two reasons. We know that a great percentage of them will after ten or thirteen years show symptoms of hyperthyroidism. The approach to hyperthyroidism is going to

be so gradual that the person won't realize it and go ahead and do a great deal of damage.

I can't quite agree with the doctor on the transitory myocarditis. I think that is true in the early stages of the goiter that is degenerating or showing hyperthyroidism, but after a certain length of time I feel that the damage has been done which cannot be repaired.

I believe, too, that when it comes to a differential diagnosis between an exopthalmic goiter and the adenomatous goiter with hyperthyroidism where it is extremely important to make a diagnosis, too many men have taken it to be an exophthalmic goiter and have given iodin. If you do that for a week to ten days you are probably not going to do any damage even if your goiter is not an exophthalmic goiter, but if kept up it is bound to do more damage than if the thing was let alone.

In differentiating between the adenomatous goiter and the exophthalmic goiter, of course in a typical case it is very easy to make the diagnosis, but in some of the cases you will find, I think in about thirty per cent of the cases of exophthalmic goiter you will find that there will be present a small adenoma. Those are the cases that give you the difficulty in diagnosing, particularly when there is no exophthalmus present.

In those goiters it is permissible to use iodin for a short period of time—ten days to two weeks or so. In that time if there is an exophthalmic goiter present you reduce the size of the gland. It probably won't do much damage to the adenoma, especially if you are giving the Lugol or any other form of iodin with the idea of getting the patient in shape for operation.

Iodin for exophthalmic goiter has not been in use long enough to state whether the iodin will absolutely cure an exophthalmic goiter. We have seen cases where in an early ophthalmic goiter Lugol is given the patient clinically returns to perfect health; the entire condition becomes normal as far as we can see. The basic metabolic rate will frequently return to normal.

However, in a recent communication from Plummer he makes the statement that on the evidence to date it is not wise to let these exophthalmic goiters go. Once you use the Lugol on them to reduce the severity of the symptoms, the thing to do is to remove that goiter.

I have seen that done where clinically there were no signs of exophthalmic goiter after Lugols; where the pathologist would examine the tissue it would be a typical exophthalmic goiter just the same as if there had been no Lugol's present.

So they are advising at the present time to use Lugol's purely, you might say, to take the edge off the goiter and relieve the pain, but not to get a patient clinically well with iodin and then let him go on and have recurrence.

There is one other point with which I was impressed in the differential diagnosis between the colloid goiters in the young peo-

ple and exophthalmic goiters. I think the majority of us don't have the means of doing a basic metabolic determination. With a good many of us who would have occasion to do it once in a while I doubt if the determination is accurate enough to be very much worth while. At least it has been my experience that it has not been.

However, there is one point that may be of some help in making a differential between the colloid goiter and the exophthalmic goiter in a nervous young person. That is, if you take a young person with colloid goiter and ask her to step up on a chair or anything where there is a little effort to it, she will almost invariably say, "Oh, Doctor, I feel too weak to get up there; I don't believe I can do it," but if they attempt it they will get up easily. If you do that with a person who has exophthalmic goiter, she will say, "Yes, I can get up in that chair easily." She will go to get up but her leg muscles will be so weak she will have a time getting up there and she will have a good bit of palpitation afterwards.

I have found frequently that that will help differentiate cases. In fact I know it to be one of Plummer's pet points in making the diagnosis. (Applause.)

Dr. S. O. Black, Spartanburg, S. C.: Mr. Chairman, I think the gentlemen have covered the field of goiter as it pertains to hyperplastic and non-hyperplastic goiter very thoroughly.

One or two other types of goiter are possible of manifestation in the thyroid gland. The thyroid gland is unquestionably one of the most important organs in the entire human body. It has to do not only with the development of the breast, the elongation of the bones, the distribution of the hair, but it also has a lot to do with sexual power and sexual desire. In addition to these functions the thyroid gland controls in a measure the velocity of cellular activity.

Now this gland like all others is liable to a number of pathological changes and conditions, not the least among which is goiter itself. Goiter might be subdivided into the congenital and the acquired group, or the congenital variety which, of course, is very rare. It might be still further subdivided into four headings: First, we speak of the vascular, second the cystic, third the colloid, and fourth the parenchymatous.

The vascular congenital goiter, strictly speaking, is not a goiter. It is a congestion or hyperemic condition of the thyroid gland, resulting from long labor. Cystic congenital goiter, of course, is very, very rare, but when present may attain the size of the fetal head. Colloid congenital goiter likewise is very rare. The most frequent type of congenital goiter is the parenchymatous, and when present may be of sufficient size to produce marked effects in the child very soon after birth.

On inspiration there is a crowing sound. The child may have periodic attacks of light unconsciousness, and a considerable degree of facial cyanosis. Unless this condition is relieved by the gland itself automatically subsiding, it might become necessary to divide

the isthmus or to do an intubation operation such as is done in croup.

At birth the thyroid gland weighs approximately four and one-half grams. It is interesting to know that it is three and one-half times its size in comparison as would be the matured gland in an adult.

Syphilis of the thyroid gland also occurs. It may be present as a generalized enlargement of the gland during the secondary stages of this disease, or it may occur later in syphilis. It is said that there have been less than thirty-five gummas of the thyroid gland yet reported, yet two of these occurred in children suffering with congenital syphilis.

Gumma of the thyroid gland is present as a hard nodule, irregular, very early it affixes itself to the adjacent tissue. Quite soon after hoarseness develops, and when there is present in the thyroid gland a mass that the physician is doubtful about—as to whether this thing be malignant or whether it be syphilitic or whether it be a simple adenoma or an abscessed condition—if there is a strongly positive blood Wassermann, certainly it should not be operated at this time.

Vigorous, persistent anti-syphilitic treatment extending over a period of six or eight weeks will not infrequently clear up the condition, the mass will melt away and disappear, and the patient will very rapidly begin to feel considerably improved. (Applause.)

Dr. Thomas M. Green, Wilmington: We have very few goiters in my section of the state. That is because we are near the sea coast. The home of iodin is the sea. We get our iodin from fish food, in our water and from our green plant life. We seldom ever see goiter in Wilmington. I know that in the generation before me it was almost unknown. That is very likely because shortly after the Civil War all the salt we got on the coast, or a great quantity of it, was obtained by evaporation of sea water.

In that way we were very richly fed on iodin, because most of the salt, even in interior sections of the country, is very rich in iodin. In its refining the iodin is removed because it cannot be brought to a state of beauty and whiteness. That has become so much so in Illinois that the state requires a definite amount of iodin to be replaced in all the salt sold in the state. I think we are coming to that in most of our states, particularly where goiters seem to be found the most.

Of course we all know that they are more prevalent in the mountain sections of the country, and yet in recent years it was found that goiter was very common in the plain states of the West. In Syracuse, one out of every fifty people have goiter. In some parts of Switzerland, all the inhabitants have goiter. In recent years back at the home of goiter (where we learned in the early days so much about goiter in the senior and junior classes) in Berne, Switzerland, they are giving the school children in these districts iodin tablets daily with the hope of reducing certain types of goiter.

We don't need that in the Eastern part of this state. That is a talking point for that section!

The goiters we see are generally from focal infection. I remember in one instance removing a very large goiter with exophthalmus and insisting upon this woman having her teeth extracted. She refused to do it, and came back in two years with the same size goiter and the same symptoms. I refused to operate. She had her teeth extracted and got well, the goiter went down. (Applause.)

Dr. W. M. Scruggs, Charlotte: I just want to relate an incident of something that happened to me last week. I was called out of town last week to see a thyroid case. The doctor up near Denver, about 30 miles from Charlotte, called me. I went out to see this case, which was a very toxic type of goiter.

In going into the family history I found that there were four sisters in the family, all having very large goiters; there were two brothers that had very large goiters. They all live there on the plantation. There were six in the same family. They called in a colored man servant and a colored woman servant; both had goiters.

The conclusion I reached was this: They have all been drinking water out of one spring, they have never had any well water on the place at all. There are eight people in one family on one farm that have goiter. This man has promised to send me some water from that spring. I intend to have it analyzed and see if I can draw some conclusions from it. I really think that water has a great deal to do with the incidence of this goiter.

Dr. Roberson, closing the discussion: Mr. Chairman, I want to thank you gentlemen for the discussion.

I would like to ask Dr. Scruggs what type of goiter these people presented?

Dr. Scruggs: I operated on one of them Saturday morning—a very toxic type; apparently it had started off as an adenomatous type and had gradually gone into the toxic type. The other three sisters apparently have no toxic symptoms at all.

Dr. Roberson: Were they symmetrical?

Dr. Scruggs: Nodular. The goiters of the two negroes are simply immense. However, only one of them had any toxic symptoms.

I might add that this woman was very toxic at the time. We had to give her a little ether toward the latter part of the operation. She was absolutely delirious after she had recovered from the effects of the anaesthetic. Saturday night she was very wild and a good part of the day yesterday. Yesterday afternoon she cleared up and came out of it this morning apparently all right.

However, of the eight cases that I saw there in a bunch she, apparently, was the only one with toxic symptoms. She had no exophthalmus or any other very grave symptom, aside from a very rapid pulse and very severe nervousness.

Dr. Roberson: That is very interesting. If the doctor can find something in the water that caused those adenomatous goiters it would be extremely interesting.

I appreciate very much the remarks of Dr. Black on unusual types of goiter. They, of course, are very interesting to hear about. I am glad to hear Dr. Green tell of one more attraction for the sea coast.

The point Dr. Sprunt brought out about the indiscriminate use of iodin in the goiter is a very pertinent one. It is a thing that we are all intensely interested in, and a thing that not only the surgeons but the men who practice medicine have got to think about.

In a colloid type of goiter of course iodin is all right. In certain stages and in a certain length of time in exophthalmic goiter it is the thing. Of course in the adenomatous type it does harm, and it may produce an exophthalmic goiter out of a simple adenoma. However, of course he does not think that the harm that is done that way overbalances the good that is done in exophthalmic goiter and other types of goiter, because any agent judiciously used may be productive of great good, but when it is not used correctly it will naturally do harm.

With reference to the question of myocarditis in adenomatous goiter: Of course we know that when there is a permanent change in any viscus, it will not be repaired as a rule. Probably I should have said there is a transient fulguration instead of a transient myocarditis.

When we have an irregular pulse, high blood pressure and that type of vascular symptom, we usually speak of it as myocarditis, probably incorrectly, but in this type of goiter there is a transient fulguration that clears up if the patient gets well, as a general rule. (Applause.)

THE CLINICAL SIGNIFICANCE OF GALL BLADDER SYMPTOMS

J. W. Tankersley, M. D., F. A. C. S., Greensboro

Abdominal disturbance, especially among females, may be divided into two periods; the early period where the lower abdomen, appendix and pelvis are at fault, and the late period, forty and upward, where the stomach and gall bladder are at fault. I do not mean there is a distinct line drawn but the conditions are more apt to be found in these regions at these ages. It is just this fact that I wish to call attention to because I wish to stress the early beginning of gall bladder disturbances. The stomach is the mouthpiece for the abdominal viscera and is the first to cry out at the approach of danger. This quality of the stomach of speaking for the abdomen has led to more abuse of its walls by useless drugs than any other field in medicine. Aside from ulcer of the stomach and duodenum, and a few rare conditions, seldom do we find pathological changes here. Hyper or hypochloridia is only the manifestation of disturbance referred from elsewhere and in only a few cases is the analysis of

help clinically. Disturbance in the gall bladder, liver and duodenum is just as likely to cause a change from the normal in this respect. From the hundreds of operations yearly this area easily ranks first in importance in the upper abdomen.

As the gall bladder owes the necessity of its existence to the bile, necessarily bile will have to come in for its share of examination. Bile is partly a waste product of liver activity, an excretion brought about by the disintegration of hemoglobin of the red cells in the liver, and a secretion of the liver cells having digestive powers in the intestines. The gall bladder is an overflow receptacle, for this bile, like a diverticulum, having a small amount of muscle fibers with little contractile power, and according to some authorities never completely empties itself. It also has some functions in regulating the flow of bile to the intestines. Certain changes are made in the bile while stored in the gall bladder. It is changed in color, concentrated, specific gravity increased by the addition of mucin and nucleoalbumens. As long as bile is kept flowing freely cholesterin is held in solution but when bile becomes stagnant cholesterin is easily precipitated. In the gall bladder stagnation of bile is favored which easily causes this precipitation, especially in the presence of stones or infection. Some hold that this inflammation is necessary to the formation of stones while others hold stones are formed in the liver ducts. Another important feature of gall-bladder study is the arrangement of lymphatics. This has a direct bearing clinically speaking, especially where those communicate with the liver to a considerable depth and the other viscera of the upper abdomen. The lymphatics also run down the duct to communicate with those of the duodenum and head of the pancreas. As the lymphatics are the natural channels of infection these areas are apt to suffer with the gall bladder. As to the source of the infection I do not believe there is any regular channel. You are familiar with Rosenow's experiments on the selective affinity of germs. Some may, and very likely a large majority, do come through the blood stream, while others attack through the lymphatics from the appendix, colon, intestines and kidney, also through the portal system. It is possible infection may travel up through the ducts but I believe this source is too infrequent to be considered.

Most organs have regenerative powers but the gall bladder is one organ in which this feature is very weak. Infection causes changes which are never completely repaired and this accounts for the chromicity of symptoms. Long continued infection too, by its pathology, destroys the function of the gall bladder and it becomes practically a foreign body. Removal of this foreign body does not seem to interfere with health or nutrition, this is demonstrated by the thousands which have been removed.

Infection in the gall bladder always gives rise to liver involvement near the gall bladder. This varies with minute points of fibrosis to change in size, color, consistency and irregularity. This hepatitis may be confined to the right side of the liver, though oc-

casionally the entire liver shows changes, usually it is a yellowish or grayish color, especially around the gall bladder. As the lymphatics of the appendix colon and intestines communicate with the intrahepatic lymphatics, infection may travel up this route and first involve the liver, then extending to the gall bladder. Some argue this is the most frequent route of infection. I think we might safely say where the liver is primarily infected it comes through the portal system and by the lymphatics to the gall bladder and where the gall bladder is primarily infected it is then conveyed to the liver through the extra and intrahepatic lymphatics. The cholecystitis may be relatively unimportant, while the hepatitis, especially post-operative, may develop grave toxic conditons, delirium, coma and death. In this hepatic type of infection we find the more marked variations in blood chemistry. It is too in this type of case that we get the best results by drainage of the duct, it seems to offer freer flow to the waste products of the liver and to bile.

The question of stone formation may be important but stones clinically are relatively unimportant. Rovsing and others claim the stones are formed in the bile passages of the liver and are carried to the gall bladder in the bile stream. Undoubtedly some stones are formed in the bile passages as I have collected 201 in one individual where I was positive they came from the liver. However, most of you will agree with me they are practically always formed in the gall bladder. The arrangement of the valves of Heister in the cystic duct does not readily permit of the migration of solid bodies. I said stones are relatively unimportant; they often lie dormant in the gall bladder for years giving no apparent trouble. Often they are discovered accidently in the course of other abdominal operations. When a stone is small enough to get into a duct or cause obstruction to the outlet of bile then it becomes important. Obstruction of a duct most always produces a palpable tumor. Of course this must be differentiated from movable kidney, cystic kidney, kinked ureter, colitis and cancer of the upper abdomen. Gall stones themselves, or adhesions the result of cholecystitis, may interfere with the normal motility and secretion of the stomach and intestines. This may produce either a hyper or hypoacidity and gastrospasm. This may in turn give rise to nervousness which may coexist with gastric or duodenal cancer and ulcer. As I have said before most of you possibly associate middle age with the symptoms of gall bladder disease. I believe we can now revise that opinion and say it has its origin in early life. We have been possibly long overlooking symptoms here because we have associated gall bladder disease with Deaver's dictum; "fair, fat, forty, colic and gall stones." I have seen quite a few cases under thirty of cholecystitis, which had or will ultimately terminate in gall stones. I recently saw a young woman about twenty in consultation ten days after her delivery in which I made a diagnosis of cholecystitis and gall stones and this diagnosis was confirmed a few weeks later by operation. Gall bladder disease really de-

velops in early life, such as headache, indigestion, belching or gas eructation, abdominal discomfort, and this usually has no connection with eating, somewhat toxic condition, without localizing symptoms. It is this type or stage of the disease that is amenable to medical treatment. Later in life, if untreated, these symptoms become more pronounced and constant, with the typical dull skin, increase of tenderness, slight fever, maybe the development of stone obstruction, empyema or hydorps of gall bladder, gangrene or jaundice and tenderness more marked in the upper right quandrant with pain radiating through to the back or between the shoulder blades. On account of the voluntary rigidity in these cases it may be necessary to give an opiate or anesthetic to make a proper examination. Often the local tenderness and constitutional symptoms are out of proportion to the severity of the pathology. As a rule the late diagnosis is not such a problem as the early ones. The Lyons tube may be used as a diagnostic agent in these early cases and may be a good therapeutic adjunct. Personally I have never obtained much good from its use and certainly have not cured any though it does relieve them considerably.

The x-ray may be a valuable aid in the diagnosis of stones or even cholecystitis. Sixty per cent and upward has been claimed by various Rontenologist and I believe it is true a normal gall bladder will not show and where it does show that in itself is evidence of disease. However I must warn here as in any field of medicine and surgery not to depend upon laboratory diagnosis. Clinical symptoms and a well-trained observant mind cannot be supplanted by the laboratory.

The degree of symptoms is a guide to our line of treatment. Of course continued symptoms indicating gall stone presence is an absolute argument for interference. Given the ordinary symptoms of cholecystitis such as enumerated above, with an increase of tenderness, fever, chill and digestive disturbances it would also suggest surgical interference, drainage or removal depending upon the individual case. In a very acute condition or very old person drainage offers the safer course, and where necessary removal could be done later under more satisfactory conditions. Hatz in the collection of 12,000 operations found stones recurred in only 3 per cent. He says nothing however about the renewal of symptoms. He does say the symptoms that recur are caused by spastic contractions of the duodenum. Mucus in the duct may cause a persistence of symptoms for several weeks following operations. If possible it is always well to carry a patient through the acute stage as the mortality during the attack, if operated, is double that during remissions. W. Koerte reports a mortality in favorable cases of 4 per cent. My experience has not been so extensive but I have enjoyed a much lower mortality.

Diseased conditions of the gall bladder, if not operated on, may give rise to serious complications. Of the chronic cases the most important of these is pancreatitis. I believe too the best treatment

for pancreatitis secondary to cholecystitis is drainage of the duct. The pancreatitis is usually around the head of the pancreas and is cured by drainage of the duct unless the disease is too far advanced. Pancreatitis is one of the chief dangers of long continued cholecystitis and is one of the arguments in favor of early interference. Next in importance comes valvular infection of the heart, myocarditis and toxic nephritis, especially where jaundice present.

In the acute gall bladder we may have peritonitis and abscess formation, hemorrhage, shock, perforation, gastric dilatation or embolism, occasionally liver abscess. Of course these conditions admit of no delay in operating.

The question of choice in operating has not been considered as I believe this will have to be decided on the merits or the individual case. The important object is to save life and restore health. If the more radical operation offers too much danger then the drainage should be done. Other things being equal I would prefer the removal of the gall bladder. I cannot close my few rambling remarks without an observation of drainage of these cases. Should it be my gall bladder that was removed I would prefer at least a small cigarette drain left in for 24 to 36 hours. This acts as a safety valve in case of leakage or infection and certainly will do no harm for the first day or so. This drain I prefer to come out through a stab wound low down in the side at the margin of the last rib. The abdominal wound is then sewed up completely.

There is just one point I wish to emphasize in my remarks and that is gall bladder disease usually starts in early life, in the twenties. Possibly our mode of easy life and lack of exercise has a lot to do with this but we must not lose sight of the fact that it more often begins in this period.

RUPTURED ULCER OF THE STOMACH

G. B. Crowell, M. D., Lincolnton

The purpose of this paper is to bring before the section a resume of the ruptured ulcers of the stomach and duodenum which have come under our care at the Lincoln Hospital between July 1, 1922 and July 1, 1924, eight in number. My attention was most forcibly directed to this condition during my first summer at Lincolnton when we had five cases, two of which occurred the same day. Seven cases were operated upon, one was autopsied. All cases operated upon are now living. Five ruptures occurred in males, three in females. The ages of the males were sixteen, twenty, twenty-three, thirty and forty-six respectively; the females twelve, thirty-eight, and sixty-seven. In six cases the perforation was found on the lesser curvature of the stomach within two inches of the pyloric ring; in two cases on the anterior portion of the duodenum. Three ruptures occurred during the month of August, three in September, one each in December and January. Perforation followed muscular effort of a strenuous nature in three cases and a diet debauch in one case.

Seven cases had an anticedent gastric history, one occurring without premonitory symptoms. One patient suffered with rather typical ulcer symptoms for twenty-four years, five suffered for over twelve years. Six of the eight cases had an exaggeration of their existing gastric symptoms for a period of from three to twenty-one days prior to the acute perforation. No case in this series passed microscopic blood with the stool and in only one case was blood ever noticed in the vomitus. An effort was made in taking the histories of these cases to establish the exact time the perforation of the viscus occurred. The interval of time between perforation and operation determines the outcome of the case. Morphia was given to only three of the eight cases, and in two of these only after the patient had consented to operation. One case was operated in five hours, one in eight, one in ten, one in fourteen and three in the twenty-fourth hour. The case autopsied died of peritonitis fifty-two hours after the acute onset of symptoms. The interval of time between perforation and operation is in the hands of the referring physician and it is due to the vigilance of these men that we are able to submit the above record.

The preoperative diagnosis was acute appendicitis in three cases, perforated ulcer in four cases, peritonitis in one case.

The appearance of the patient is highly suggestive of ruptured ulcer. The shocked, pinched expression, restricted respiration, the general abdominal rigidity more on the right side and in the epigastric region, in three of our cases persisting after complete ether anesthesia, the cutaneous hypersensitiveness, in two cases a sheet could not be tolerated upon the abdomen. There are a few other factors which when viewed in retrospect seem to be suggestive. The pulse in all our cases was over 100 and averaged 110, which is about 20 beats higher than our ordinary acute appendix cases. The highest temperature recorded on admission was 101, the lowest 96, the average being 99. The white blood count averaged 17,000. This being several thousand higher than we make our usual cases of acute appendicitis.

The diagnosis of ruptured ulcer is usually made in about fifty per cent of cases after the abdomen is opened. Acute abdominal symptoms with a mildly inflamed appendix is suggestive. A peculiar gurgling sound was heard after the peritoneum was opened in three of our cases. I have never heard this in any other condition. The most constant operative sign in our series was the presence of a non-odorous slimy, straw colored fluid in the peritoneal cavity. This fluid gravitates quickly to the pelvis, and is found usually in greater amount there than at any other point, hence we always explore it with the index finger in suspicious cases.

Our own technic of operation briefly is as follows: The ulcer is located and surrounded by a circular catgut, removed by cautery, two cross stitches are tied, the circular stitch drawn, a piece of omentum tied down over ulcer site. Warm salt solution is then poured into the peritoneal cavity and evacuated by suction. Two

rubber tissue drains are usually used, one being placed in the pelvis and brought out at the lower angle of the incision, the other placed in the subhepatic fossa and brought out at the upper angle of the incision. These drains are removed in twenty-four hours.

The postoperative treatment briefly includes nothing by mouth for forty-eight hours, morphia as needed, no purgative until the seventh day. After three days the patients are placed on a modified Sippy regime which is kept up for one month, after which time they are placed on a diet and advised to have all foci of infection attended.

These seven cases have been carefully observed at regular intervals since leaving the hospital. Four have been away from the hospital for over two years and one only seven months. Six of the seven cases have gained weight, which averages eleven pounds. One case has lost four pounds. Six of the seven cases have been free of all gastric symptoms since operation. The other case is well when he observes his diet.

DISCUSSION OF PAPERS OF DRS. TANKERSLEY AND CROWELL

Dr. Robert L. Gibbon, Charlotte: I would like to congratulate the doctor upon his results. I remember very feelingly the first case of gastric perforated ulcer on which I operated. There was a recovery, and I remember how good I felt about it. Of course now we have learned a great deal more about it, and if we see the cases early enough the results are usually good.

I want to discuss one or two features. One is the classification of the cases. We know that these perforations occur in an acute chronic form, the chronic form being very slow and giving ample time for protective adhesions to form.

Another type is a minute performation that leads to a very slow contamination of the peritoneal cavity. The more acute fulminating type is a large performation with a very extensive soiling of the peritoneal cavity with gastric contents.

These are the cases that give us the typical classical symptoms that have been so aptly and eloquently described.

The chronic case is much more difficult to diagnose. These chronic cases sometimes perforate posterially and give rise to abscesses which further complicate the diagnosis. So much for the classification of cases.

The first matter of most importance is the recognition of the condition, not necessarily the recognition that the patient has a perforated duodenal ulcer, but the recognition of an acute abdominal crisis, demanding prompt interference. The prognosis in these cases is probably more dependent upon the time element than upon anything else.

The question of surgical interference has two features. One is whether we shall simply close the perforation and provide ample drainage, or whether we shall do a gastro-enterostomy in the hope of permanently curing the ulcer, or whether we shall treat the ulcer locally, as Dr. Crowell suggested.

I think these questions are a matter of surgical judgment in which the classification that I have just attempted comes in very aptly. If you have a small perforation that has not extensively soiled the peritoneum and has not produced peritonitis, except locally, it is entirely proper to do a gastro-enterostomy.

If, however, you have extensive soiling of the peritoneum, it is extremely foolish to do a gastro-enterostomy. If your gastro-enterostomy fails, your patient is sure to die. He may get well if you simply drain him and don't even close up the perforation. So that it is a little dangerous to give out any general advice about the use of a gastro-enterostomy in these cases.

I speak a little feelingly in this particular because I am almost sure I lost a case from doing a gastro-enterostomy when if I had adopted a simpler proceeding I have every reason to believe that that patient would have survived.

I, of course, have seen patients who have had a successful gastro-enterostomy with a perforated ulcer. I have in mind a man who has such an operation; he was an interne in a hospital at the time. The operation was done very promptly and in all probability there was no general peritonitis. There could not have been any peritonitis because if you have a general peritonitis your gastro-enterostomy is going to fail. This case resulted very successfully.

After going through this very dangerous siege, the patient is always very anxious to know whether he will have any more trouble or not. Statistics have seemed to show that fifty per cent of the gastric and duodenal ulcers that perforate get well without giving further symptoms. None of us have had a great number of these cases. I think of two or three now without consulting my records in which this did not result in the cure of the ulcer symptoms. They still suffered from the ulcer and some of them have had to be operated upon since.

This effect of perforation in curing the ulcer is responsible for some treatment that has been advised in operating upon duodenal ulcer particularly. That is to artificially perforate it, attempting to do the same thing that happens in the state of nature, which so often results in a cure.

I was interested in the peculiar sound that Dr. Crowell spoke of. I was wondering whether that was not the escape of gas from the abdominal cavity when he operated and opened the peritoneum. I have myself noticed that on several occasions when you open the peritoneum. I enjoyed the doctor's report very much.

I would like to say (if I am not occupying too much time) that I was right much struck with Dr. Tankersley's idea that gall stones begin oftentimes in early youth. The youngest patient I ever operated upon for gall stones was eighteen years old.

Sometimes in going over the history of cases of gall-bladder disease, old people can give us a history reaching way back thirty or forty years with symptoms that very closely resemble gall-bladder

disease. So I really believe that a great many of these cases start in early life. (Applause.)

Dr. B. C. Willis, Rocky Mount: I enjoyed very much what Dr. Crowell had to say because it had some real statistics. It showed the working up of the cases in a most thorough manner. I reported five cases at the Tri-State meeting in Spartanburg. I, too, had the same experience that he had. Two came in on one day. They were operated on one after another in sequence. I am happy to say that those two survived.

Of the five we lost one. That was an elderly man whom we did not see until thirty-six hours after the catastrophe happened. He had received nearly two pints of mustard water. He survived the operation for about six hours.

I enjoy papers very much that show the thoroughness that Dr. Crowell's paper shows. He has worked these cases up in a very fine manner and given us real statistics. (Applause.)

Dr. L. A. Crowell, Lincolnton: I was awfully glad to hear Dr. Gibbon speak of gastro-enterostomy in connection with perforated ulcer. I have often thought if I had an operation I would like for a man like Gibbon to do it. I want the man who goes into my abdomen to be conservative.

I was awfully glad to hear him say that it was not safe to do a gastro-enterostomy in a condition of rupture with free fluid in the peritoneal cavity. Other men might do it and get away with it.

We have made it a rule in all these cases not to give water in any quantity for a certain length of time—possibly twenty-four or forty-eight hours. However, I think I have proved the fallacy of that in one case. I remember this lady had a small goiter on her neck at the time she had a rupture. She had no toxic symptoms, however, from the goiter until after the operation for ulcer.

On the same night following the operation for ulcer she suffered a great deal for the want of water. Something turned loose in that thyroid gland, a something that started that pulse to running away. Something told me to go to the hospital that night about twelve or one o'clock. I found that woman lying flat on her back with a pulse of 150. It was just flying. Previous to operation her pulse was not over 100. She had no symptoms whatever of hemorrhage.

I immediately began to pour water into her by the glassful in less than eight hours from the time the operation was done. I had not given her more than two or three glasses of water until all the symptoms had subsided. The governor had got out of order and the engine was running away.

Another thing: I think we ought to advise all patients, after they have had a conservative operation for ruptured gastric ulcer, to see that all points of infection, focal infection—teeth, tonsils, etc.—are cleared up. If an infected tooth and pus at the root of it will cause one ulcer, if left alone it evidently will cause another. So we have made it a rule to put the patient on a rather rigid diet

for a length of time, and at the same time having all decayed teeth and infected tonsils removed. I think that will prevent the possibility of having an ulcer in the future. (Applause.)

SACRAL NERVE BLOCK ANESTHESIA IN SURGERY AND UROLOGY

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Epidural, Extradural or Caudal Anesthesia was first used by Cathelin in 1901 for the purpose of treating neuralgia, sciatica, sexual neuroses and enuresis. He tried the method for the purpose of inducing anesthesia but met with little success. In 1910, Laewin, by the addition of Sodium Bicarbonate to a larger quantity of a more highly concentrated novocaine solution, was able to perform painlessly the more common operations on the anus, perineum and female genitalia. He called the method extradural anesthesia.

Parasacral anesthesia is first accredited to Braun. He injected the sacral nerves one by one, reaching them at their exit from the anterior sacral formina. This method of anesthesia is performed with the patient in the lithotomy position, two points of injection two centimeters from the median line at the level of the sacro-coccygeal articulation are selected. A needle five to six inches in length is introduced and the way is felt past the edge of the sacrum, and along the anterior surface of the bone, parallel to the median line to the heigth of the second sacral foramen. This entire distance is injected with twenty cubic centimeters of 1 per cent novocaine solution. The needle is now drawn back to the edge of the bone and redirected at a slightly increased angle much deeper than before, until it strikes the promontory of the sacram close to the first sacral foramen when twenty cubic centimeters of solution is injected. The procedure is repeated on the opposite side, after which a final injection of five cubic centimeters is made between the cocyx and rectum. The chief objections, as I see them, to this method, are: First, the danger of perforating the rectum; and second, the danger of spreading infection and of disseminating cancer cells, when operating for cancer of the rectum.

The sacral nerves can be injected one by one by passing the needle through the posterior sacral formina. This procedure constitutes trans-sacral block, and was proposed by Danis in 1913. This method has overcome the disadvantages and inconveniences of the parasacral method of anesthesia. Combined with a low caudal injection, complete anesthesia of the entire pelvic floor, and all the structures lying below the pelvic peritoneum is obtained. Combined with a suprapubic field block in resection of the bladder for carcinoma and diverticulum, and in doing suprapubic prostatectomies,

the anesthesia is excellent and there is complete relaxation of the muscles of the abdominal wall.

Sacral nerve block by the trans-sacral, or the single epidural injection method, or both, if properly administered, is as safe a procedure as any other method of nerve blocking, and should not be confused with spinal anesthesia. The fluid may ascend the vertebral canal in the extradural space when a large amount is injected, but with proper technic it never penetrates the dura to mingle with the spinal fluid. If we should accidently enter the spinal canal, we can withdraw the needle, change its direction, then wait a few minutes, giving the opening time to close.

While the technic of sacral anesthesia is simple, still in order constantly to obtain perfect anesthesia it requires as in blocking of other nerve trunks, a thorough knowledge of the anatomy involved, plus practice and patience.

ANATOMY

The sacral hiatus, through which the needle must be introduced before it is advanced deeply into the sacral canal, lies at about the juncture of the sacrum with the coccyx, and has the shape of an inverted "V" or "U". This opening results from the defective or non-closure of the laminae of the last sacral vertebrae and is covered over by a dense ligamentous structure, the posterior sacro-coccygeal membrane and ligaments. The hiatus varies much in size but is nearly always large enough to permit the ready passage of the needle.

The most important consideration, the sacral canal, is a prismatic space connected above with the spinal cord of which it is the continuation, its lower extremity being the sacral hiatus. Laterally the sacral canal gives exit to the sacral nerves by way of foramina. These foramina soon divide into a "Y" or "V" shaped canal for the passage of the anterior and posterior divisions of the sacral nerves through the anterior and posterior sacral foramina. The sacral canal is filled with loose adepose tissue, areolar, connective tissue, lymphatics and venous plexuses. The dural sac ends opposite the lower border of the second sacral segment, the filum, terminalis of the cord passes through the loose cellular tissue contained in the sacral canal.

The posterior or lateral sacral foramina lie in the same straight line on each side of the sacral crest and are covered over by ligamentous structures, they traverse the sacrum anteroposteriorly and are very nearly equidistant from each other.

The sacrum has a great many variations in different individuals and a careful study of the osteology, as well as the course of the nerves is a necessary preliminary investigation.

It is quite common to find a sacrum with its hiatus very high up. The roof of the sacral canal may be entirely lacking (complete sacral Bifida). There may be closure of the first arch only, or closure of the first two arches. There may be an abnormally low closure and small hiatus. The hiatus may be so compressed that a

needle can barely be introduced. There also may be found frequent variations in the number of sacral segments. Not infrequently there are six pieces. The number of foramina vary with the number of segments. In sacrums of six segments there are five foramina on each side. Variations in the size and shape of these foramina are also noted.

We commenced the use of this form of anesthesia in October 1922, a little more than two years ago, employing it at first in operating about the anus and rectum upon patients who were in extremely grave condition. We now employ it almost exclusively in operations on the rectum, anus, prostate gland and bladder, urethra, scrotom, testicles and in painful urologic examinations and manipulations. We have also found it to be entirely satisfactory in operations on the vagina, cervix uteri and perineum.

Technique. We employ either the caudal block, trans-sacral or a combination of the two methods, depending upon the type of operation to be performed, and conditions met with in making the caudal injection. If, as sometimes occurs, the tip of the needle cannot be passed as high up in the sacral canal as the level of the second sacral foramen, it is best, in the majority of cases, to block the nerves in the sacral foramina. If a hysterectomy, either abdominal or vaginal, or a posterior resection of the rectum high up is to be performed, we do a complete sacral block, that is, a combined caudal and trans-sacral, and also a paravetebral block of the last three lumbar nerves, according to the technique of Labat's method of procedure. A preliminary hypodermic of morphine, either with or without scopolomine may or may not be given, depending upon how nervous and apprehensive the patient is. In all time consuming major surgical operations, performed under this type of anesthesia, we give a preliminary hypodermic of morphine and scopolomine.

All injections are made with the patient lying flat upon the abdomen, with a cushion slipped under the hips, to raise the sacral region and render the landmarks more accessible. The skin over the sacral region is then sterilized, following which the sacral hiatus is defined by the left forefinger passed on the midline of the back from the tip of the coccyx toward the sacral region. A Labat spinal puncture needle, 80 mm. in length is now entered perpendicularly to the skin until it penetrates the membrane closing the sacral hiatus. It is then slightly withdrawn and the end depressed to an angle of 20 degrees. It is then slowly and carefully introduced upward in the midline. After the stylet is withdrawn from the needle the end is carefully inspected to make sure there is no blood or spinal fluid running out. If there is, withdraw the needle slightly until the flow ceases and wait a few minutes before making the injection.

We have recently been using 30 to 40 c.c. of a two per cent novocaine epinephrin solution in the sacral canal, and from 5 to 10 c.c. of a one-half of one per cent solution in each of the sacral foramina, starting at the second, which is located by raising a wheal 1 cm. medial to and below the posterior superior iliac spine. We reduce

by 1 c.c. each time the quantity deposited in each subsequent foramina. We inject 1 c.c. more in the first foramina than in the second.

When first commencing the use of this form of anesthesia we employed a novacaine bicarbonate solution with the addition of sodium chloride. We did not use epinephrin in this solution, preferring to have it in reserve in case of collapse from the toxicity of the drug.

Without the use of adrenalin complete anesthesia makes its appearance more rapidly, but the duration is not so long, nor is it as profound. Analgesia may begin at the ano scrotal region in 5 minutes; prostate and bladder in 20 minutes. It may require 40 minutes to be complete. Its duration is about 2 hours. Three or four minutes should be consumed in making the injection into the sacral canal, during the injection, the patient may complain of cramps in the legs, which is proof of correct insertion of the needle and indicates too rapid injection. The injection is always painless when not made too fast. A slow injection gives the solution a chance to diffuse gradually through the tissues of the canal and avoids trauma.

We have employed this form of anesthesia in 175 cases, using the extradural, caudal or epidural method of injection alone in 137 cases; trans-sacral alone in 3 and a combination of the two methods in 35 cases. Twenty-two of this series were for operations upon the prostate gland and bladders, six of these being suprapubic prostatectomies, six suprapubic cystotomies for drainage and examination of the interior of bladder, three for removal of bladder stones, two cystotomies for rupture of bladder, four Young's punch operations, three for fibrous contracture at vesicle neck and one for median lobe enlargement of the prostate gland, and one prostatotomy for abscess. There were twenty-eight operations on the rectum and anus, eighteen hemorrhoidectomies, seven anal plastics for fissures and fistulas, and three proctoscopic examinations with excision of specimens. There were eighteen operations upon the vagina, cervix and perineum, six for the excision of Bartholin glands, two combined perineorrhaphy, colporrhaphy and repair of cervical tears, three perineorrhapies, two of which were for complete lacerations. One amputation of cervix uteri, and six dilatations and curettage of uterus. There were fourteen operations performed upon the urethra, ten dilatations of filiform strictures in patients who had complete retention of urine, one removal of an impacted stone, and three meatotomies.

There were seven epididymoties, three varicocele operations, and three operations for hydrocele. There were twenty-nine cystoscopics for operative procedures requiring the use of a cystoscope, ten manipulations of ureteral stones, six fulgurations of bladder tumors and thirteen dilatations of ureteral strictures. Fifty cystoscopic examinations were performed under caudal anesthesia, twenty-two for ulcerative cystitis, four for acute trigonitis, three tuberculous cystitis, four malignant cystitis, three submucus ulcers, and fifteen pa-

tients who were either very nervous or requested some form of anesthesia.

All of these cases were entirely successful except fifteen. In two it was necessary to give gas and ether from the start; three other cases complained of having a great deal of pain but no form of general narcosis was resorted to, two of these operations were for hemorrhoids, and one a prostatectomy. The majority of the failures occurred in the cystoscopic cases, there being eight in this series, and seven among the general surgical group.

Failure in the majority of cases, was, I believe, due to the fact that we commenced operating too soon. Experience has taught us that it is best to wait 30 or 40 minutes after the injection before beginning the operation and that anesthesia is the deepest at about one hour. Imperfect technique was the cause of failure in some of the early cases I am sure several at least, if not all, of these could have been made successful had a trans-sacral block been performed after failure of the epidural injection.

TABLE

RESULTS OF SACRAL ANESTHESIA IN OUR SERIES OF 175 CASES

		RESULTS	
	CASES	SATISFACTORY	FAILURES
OPERATIONS ON PROSTATE AND BLADDER			
Prostatectomy	6	5	1
SUPRAPUBIC CYSTOTOMY			
For drainage and examination of the interior of bladder	6	6	0
Removal of bladder stones	3	3	0
For ruptured bladder	2	2	0
Young's Punch operation	4	4	0
Prostatotomy for abscess	1	1	0
OPERATIONS ON RECTUM AND ANUS			
Hemorrhoidectomy	18	16	2
Anal plastics for fissures and fistulas	7	6	1
Proctoscopic examinations with excision of specimens	3	3	0
OPERATIONS ON THE VAGINA, CERVIX AND PERINEUM			
Excision of Bartholin glands	6	5	1
Combined perineorrhaphy colporrhaphy and repair of cervical tears	2	1	1
Perineorrhaphy	3	3	0
Amputation of cervix	1	1	0
Dilation and Curettage of Uterus	6	4	2
URETHRAL OPERATIONS			
Dilation of filiform strictures	10	10	0
Removal of impacted urethral stone	1	1	0
Meatotomies	3	3	0
Hydrocele operations	3	3	0

	CASES	RESULTS SATISFACTORY	FAILURES
Varicocele operations	3	3	0
Epididymotomy	7	6	1
CYSTOSCOPIES FOR OPERATIVE PROCEDURES REQUIRING THE USE OF THE CYSTOSCOPE			
Manipulation of ureteral stones	10	10	0
Fulgurations	6	6	0
Dilatation of ureteral strictures	13	12	1
CYSTOSCOPIC EXAMINATIONS			
Ulcerative Cystitis	22	20	2
Acute Trigonitis	4	4	0
Tuberculous cystitis	3	3	0
Malignant cystitis	4	3	1
Submucus Ulcer	3	3	0
MISCELLANEOUS			
By request, very nervous patients, etc.	15	13	2
Total	175	160	15

Untoward Symptoms: Undesirable complications occurred in five cases. One was an old man with a left sided hemiplegia, upon whom a prostatectomy was performed. We had him in the usual position for block of the sacral nerves, hips being elevated, and head consequently lowered. While the injection was being made he suddenly developed symptoms of collapse, with extreme respiratory difficulty. As soon as he could be turned upon his back, and head elevated, the condition cleared up and he asked what had happened. We believe this reaction was due more to lowering the head than any effect of the novocaine used. All the sequelae occurred in patients who were very nervous and in a weakened state. In two cases there were convulsions, of the Epileptiform variety, which were over with before any treatment, other than holding them on the table, could be given. Following the convulsions in each case, a prolonged cystoscopic examination, including urogrophy was carried out with patient in good condition. Another patient reacted with nausea, vomiting, dizziness, rapid pulse and a great fear that she was dying. There was nausea and an occasional vomiting spell for four days. In one other case the injection was followed by a partial respiratory paralysis, nausea and vomiting.

The untoward symptoms appeared immediately after the injection was made into the sacral canal. In no case was it necessary to postpone the commencement of the operation for more than a few minutes. There was no case of hemorrhage, and none of necrosis of the skin at the site of puncture.

In no case did any permanent or lasting trouble develop as a result of sacral nerve block anesthesia. We have not found it necessary in any of these cases to give stimulation to the circulatory system in any manner. The blood pressure instead of dropping, as it

does following inhalation anesthesia, has a tendency to remain stationary, or to rise. With but few exceptions the patients on the day following operation by this method, were in surprisingly good condition. Also, those who were cystoscoped under this form of anesthesia, with but two exceptions, did not complain of any post cystoscopic pain and distress. We attribute this to the fact that the anesthesia causes a relaxation of the ureteral walls and in consequence there is no muscular spasm, also the patient not being conscious of any pain, keeps quiet while on the table, and there is less trauma.

CONCLUSIONS

I. We have employed sacral anesthesia in one obstetrical case where it was necesasry to do an internal podalic version. The operation was performed without pain and relaxation was perfect, the anesthesia did not stop the uterine contractions.

II. Sacral nerve block anesthesia produces a degree of relaxation of the anus and pelvic floor, that cannot possibly be obtained except under the deepest inhalation narcosis.

III. The bother and consequent loss of the surgeon's time during operation when local infiltration is employed is avoided.

IV. This form of anesthesia has enabled us to operate with comparative safety, upon several patients on whom the risk of using a general anesthetic would have been too great.

V. Anesthesia of the sacral nerves is especially satisfactory in urologic cases, where so many patients are encountered, having reduced renal function. The mortality following operations on the bladder and prostate is markedly reduced. It materially lessens the shock that so often follows the enucleation of the prostate gland. Small contracted and infected bladders may be dilated sufficiently to make a complete cystoscopic examination without discomfort to the patient.

VI. There are no contraindications to sacral nerve block anesthesia, other than deformities and anomalies of the sacrum in which it is impossible to enter either the sacral canal, or the posterior sacral formina, and, in suppurative infections and malignancy of the skin and subcutaneous tissue of the sacral region.

VII. Anesthesia of the sacral nerves should be limited to operations on the prostate gland, bladder, rectum, pelvic floor, cervix, urethra, genitals, and in operative obstetrics. The testicles and cord are not anesthetized, but may be by injecting from 2 to 5 c.c. of the solution into the cord. If large amounts of the solution are not used the procedure is free from risk. I believe there is considerable risk connected with the injection of large quantities of the solution in order to obtain higher levels of anesthesia.

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DISCUSSION

Dr. William Sprunt: I want to congratulate the doctor first on his percentage of successful results. It is remarkably good.

I have been very much interested in this matter for the past few years. I had an opportunity to try out the different strengths of solution in connection with Dr. Meekin. We found in using the various strengths of novocaine, using a two per cent for the sacral block and bi-sacral block—I mean an epidural block—we got quite a few cases that showed symptoms of novocaine poisoning. We tried it on down the line to half a per cent, and found we didn't get enough anesthesia to make it worth while. We finally settled on one per cent as being the nearest to ideal that we could get.

In that series of experiments we also tried doing the caudal anesthesia without any of the trans-sacral block. In that, working with one or one and one-half or two per cent, in amounts of from thirty to forty or fifty c.c., we found that over a large number of cases you could only count on from 75 to 85 per cent successful results. That is, you would get your anesthesia in about that many cases.

If you add to it the trans-sacral, you can raise that to somewhere between 95 and 100 per cent perfect results. That is, of course, after the technique of the thing has been thoroughly mas-

tered. I can see a great many failures purely from faulty technique. Especially is that true in doing the trans-sacral. A beginner is likely to find his foramen all right, but fearing to put the needle in too far will only get the posterior branch of the nerve when it is the anterior you have got to get.

The doctor spoke of the para-sacral anaesthesia. I think now that parasacral is almost inexcusable. I can't see any reason for doing it. The dangers are too great. I quite agree with him that you have got too much risk. You have a curved sacrum there to run a straight needle through. If there is any malignancy in the rectum you stand a very good chance of scattering it. You can't be absolutely sure of your anaesthesia and you will get more failures.

I notice he felt that sacral anaesthesia plus a paravertebral did not give anaesthesia in enough cases to make it worth while for anything in the abdomen except for the bladder. You get an absolute anaesthesia of the bladder and the prostate in that region, but when it comes to the peritoneal cavity, I think we can pretty definitely say that the paravertebral and parasacral where you get anaesthenia with it it is more of a lucky accident than anything else. We discontinued that altogether.

For hystorectomy in a good patient you can use a sacral block and get very nice results with it. In certain cases the first sacral nerve will apparently be the sole supply of the pelvic peritoneum, but the number of cases in which that is true is relatively small. I don't think it does any good to go high up and do the last few lumbars. At least we didn't find it true. However, you can do a certain number without any pain whatsoever. In the majority of cases when you get to the pelvic peritoneum you will have to give gas or else know that your patient is suffering.

As to the technique of doing it: We felt very strongly that any needle put in the sacral canal or the caudal canal should have strong aspiration before any fluid was injected. I have seen the needle go in through the dura but not have any fluid drip out of the needle, but if you will connect the syringe and aspirate you will get it.

That same thing will happen occasionally with veins. You will get in a vein and not know it unless you aspirate. Of course injection in either of those two conditions is adding a lot of danger to it and not giving you the anaesthesia where you want it.

As to the use of adrenalin in sacral anaesthesia, we felt that in certain cases that you could not use the adrenalin for one reason or another—about the only case I think of is in a certain case of exophthalmic goiter it was almost better not to try to do anything on the sacral if it was going to be very extensive without the adrenalin, when you consider that you use practically one gram of novocaine injected in a rather small area, that is going to be absorbed pretty quickly, it is asking right much of the average patient to stand for that much novocaine. You will frequently see symptoms of novocaine poisoning. With the adrenalin it is right much of a

rarity to see any symptoms of novocaine poisoning, providing your injection into the dural canal is made slowly.

With reference to the injection into the transsacral spaces, it does not matter how rapidly you do that; you can put that in practically as fast as you can get your needle in without any danger, but just as sure as you inject 20 or 30 c.c. into the sacral canal and do it rapidly you are going to almost immediately have that patient pass into shock. It is one of the most disheartening things I know of to see them do it, because you have got your solution in there and there is nothing you can do to get it out. The only thing you can do is to hope that it is going to wear out and that they will take care of it.

I do believe that with the proper precaution surrounding sacral anaesthesia it becomes nearer being ideal for certain purposes than any anaesthesia you can get. In talking with Dr. Judd and Dr. Hunt, who do most of the prostatic work at the Mayo Clinic, they both felt they got the highest mortality on prostates under spinal anaesthesia; next to that was under general anaesthesia, and the least was under sacral.

I don't exactly agree with the Doctor on the wait after the injection. I feel that if you do a caudal and then do a trans-sacral, in about 95 per cent of your cases you will have complete anaesthesia. For instance if you were doing an abdominal by the time you can turn that patient over and do an abdominal wall block, you will have absolute anaesthesia of the bladder and prostate. There is no sense in waiting. The sooner you can get started with it and get it over the better, because while the anaesthesia will sometimes last as long as seven hours, (I think two hours and 15 minutes is the average) you will see cases where it won't last over 30 to 40 minutes.

Now there is one point about a sacral anaesthesia that I think we will find in a large number of cases. That is, that they do have to be catheterized after a sacral anaesthesia more than any anaesthesia that I know of. You will find that in doing hemorrhoids or fistula, any little operation on that order where you think there should not be any trouble, they frequently have to be catheterized. Just why that is I don't know unless it is some residual effect on the nerves. (Applause.)

Dr. Highsmith, closing the discussion: I want to thank Dr. Sprunt for his discussion of this paper. He has had a good deal of experience in sacral nerve block anaesthesia, having done this work for a considerable length of time at the Mayo Clinic. His remarks are well taken. I feel that he knows more about the subject than I do.

Of course in doing abdominal hysterectomies under sacral anaesthesia combined with paravertebral of the fifth, fourth and third lumbar vertebra when combined with this suprapubic field block: in a limited number of cases—three in all being the number I have operated upon under this form of anaesthesia—my results were surprisingly good. The anaesthesia was absolutely perfect, ideal.

In regard to the length of time it takes for anaesthesia to set in, my experience has been that it does not correspond with Dr. Sprunt's. My experience has been that it takes from 30 to 40 minutes, and that the anaesthesia is best in my hands in about one hour from the time of the injection.

I do not advocate sacral nerve block anaesthesia in all cases. I think in many cases the patient should be consulted as to what kind of anaesthesia he prefers. All things being equal the patient should be given the type of anaesthesia which he prefers. Many of them do not want regional anaesthesia. A few of them request regional anaesthesia and I think they should have it.

This form of anaesthesia has its chief use in neurology where we find so many patients with bad kidneys, and in cystoscopic cases where you have small contracted and infected bladders, you can do a prolonged cystoscopic examination, get good dilitation of the bladder and take your time and do your pyelograms, and it is absolutely ideal.

I think this form of anaesthesia has a place in surgery, neurology and obstetrics, and a very important place. (Applause.)

THE MEDICAL JOURNAL: A NECESSARY ADJUNCT TO THE SURGEON AND THE HOSPITAL

James M. Northington, M. D., Charlotte

The invitation of your Secretary to say something about medical journalism found me in a very responsive mood. I could talk freely and at length for I am little handicapped by a knowledge of my subject. My becoming a medical editor was very much after the fashion of the metamorphosis of Dr. Geo. Ben Johnston's blacksmith into a surgeon—I simply declared myself one. The then editor was appointed to a position with the State Board of Health, necessitating a transfer to Raleigh, and I was the only medical man in Charlotte who didn't know better than to take charge of a medical journal. That's how it came about.

Now, I shall not weary you with a history of the development of medical journalism. It is self-evident that, in order that one's work shall be known, he must have an avenue of publicity. Commercial and trades people avail themselves of the pages of the newspapers and lay magazines. Professional men cannot, with dignity, make use of these. In some county newspapers doctor's cards have been carried. Several years ago I recall seeing on one page:

"Dr. Smith—office over X's Drug Store. Calls answered promptly."

"Dr. Jones—office over Y's Drug Store. Calls answered promptly. Night or Day."

"Dr. Brown—office over Z's Drug Store. Calls answered promptly. Night or Day. Town or Country."

This illustrates the fact that professional men find it impracticable to make this kind of bid for patronage; that it is unwise for

doctors to use the daily papers (at least the advertising sections) for advertising purposes; and that there is a reason for this based on something more than a quixotic conception of professional dignity.

Still it is the doctor's duty to himself and the public to make known his special qualifications for treating sick persons and the facilities offered by his institution. I believe Emerson is credited with having said, "If a man preach a better sermon, write a better book or make a better mouse-trap than his neighbor, though he make his home in a wilderness, the world will make a beaten path to his door." Emerson had much more to do with preaching sermons and writing books than making mouse-traps, and preaching and writing are certainly the most valuable and valued means of publicity. So it would seem that a statement which might at first glance appear to really say something is "Knocked into a cocked hat," if I may quote the earnest hope expressed by Woodrow Wilson as to the perennial W. J. B.

The great clinics—university and private—have been built up through meritorious work, plus publicity. Is there one of you who believes that the clinic of Johns Hopkins or the Mayos could have been built to their enormous proportions without intelligently directed publicity—even without the Johns Hopkins Bulletin and the Collected Papers of the Mayo Clinic? And these probably do not represent a hundredth part of the total pages sent out to medical men from these institutions.

We doctors of the south have been very loath to publish. Undoubtedly part of this was, and is, due to laziness, and another part to a very fitting sense of the worthlessness of some of our productions. However, much which we have done and are doing is valuable. Some of this never sees the printed page, and so, is lost to medicine; some goes to the established, opulent journals of other states and sections, and a modicum to medical journals published locally.

Singularly enough, in my very brief experience in this field, the very biggest men in the profession in other parts of the nation have invariably responded with the utmost alacrity to requests for original articles. It is obvious that they realize the value of publicity and that, notwithstanding the great impetus they have gained by their own work, and their teaching and society connections, in order that there may be no waning of their prominence in the medical world, they realize that they must use the medical journal often. The use of the advertising columns of medical journals by hospitals is perhaps the rule. But in this section there appears to be some opinion that there is a certain indelicacy about the placing of a professional card in a Physicians' Directory in a journal. How can it be considered on the one hand right and proper for Dr. A., who has a hospital, to advertise his surgical or neurological institution; and, on the other, improper for Dr. B., who is just as good a surgeon or neurologist and can hospitalize his patients just as well, albeit the

institution is not personally conducted by himself, to carry a card making known any or all these facts?

In addition to the general principle involved, we have the specific examples of the practice of men of the highest standing in our national association. Current numbers of four official state journals picked at random from my exchange table show, in each case, a "Physician's Directory," in which are carried cards setting forth the specialty, office hours, etc. This is certainly of marked service to doctors and patients; and when, as in the Rhode Island Journal, a Dentists', Druggists', Nurses' and Masseurs' Directory are also carried its value as a source of information is greatly enhanced. Many more of our patients who need massage would get it if we were constantly reminded of the availability of this treatment—and without passing into the hands of an irregular. Each of us has need more or less frequently of male nurses. The names of a few of these carried in a Directory would bring to mind the possibility of obtaining their services, and a mutually profitable arrangement would be effected.

Probably some will think only the insignficant and unknown members of the profession make use of cards in these directories. In the Rhode Island Medical Journal a card is carried by the Secretary of the State Medical Society; in that of Kentucky by Dr. Louis Frank, President of the State Society; and in the New Orleans Journal, which is the official organ of the Louisiana and Mississippi Societies, Drs. Allan C. Eustis, Randolph Lyons, Wm. Scheppegrell and Ruldolph Matas are listed.

These are some of the ways in which the medical journal can be made more useful to the surgeon and to the hospital.

The surgeon and hospital can reciprocate by patronizing our commercial advertisers, double spacing all the copy sent in for publication, and by choosing one way to spell programme, albumen and technique—then sticking to it.

PRELIMINARY CONSIDERATIONS IN CONNECTION WITH PROVISIONS OF THE DUKE FOUNDATION FOR HOSPITALS

W. S. Rankin, M. D.

Secretary State Board of Health, Raleigh

I feel a little out of place, as the preceding speaker expressed himself, in coming here before the North Carolina Section of the American College of Surgeons. However, I could hardly avoid the invitation of our friend, Dr. Long, to come here to say something to you, to let you know at least, that in the new official capacity which I am shortly to assume I am very much interested in the matters in which you are interested.

I note from the subject assigned me that my remarks are to be very general, very scattered. I don't know why I should feel so responsible in discussing a matter of the relation of the Duke Foun-

dation to the interests of the American College of Surgeons in this state, but as a matter of fact, ladies and gentlemen, I do not speak officially for the Foundation. I am not yet its officer. I do not know just exactly what the terms of the gift are that Mr. Duke has made to the Foundation. Nothing in the way of definite policies to guide the Trustees of the Foundation in the development of their various interests during the next ten, fifteen, twenty or thirty years has yet developed, so in speaking of this matter I am reminded of one of Dr. Osler's essays on the birth of truth, in which he pointed out that truth might be prematurely born, miscarried, born out of season as a child, and I rather think that my thougths now in what I am saying are rather premature, certainly unofficial. Whatever I say you must take not only with a grain of salt but with a whole ounce of it.

I can say this, however, that in my capacity as Field Director—my official title has not yet been decided upon—in my new capacity with the Trustees of the Duke Foundation, I shall try to acquaint the Trustees with what the membership of this Association stands for and has stood for and what it has done for North and South Carolina.

Already in the short preliminary contacts I have made with these gentlemen I have pointed out to them something of what the surgical profession of the two states has meant to the states in their public relationships. You gentlemen and the interests you represent have given North and South Carolina practically the only hospital facilities that they have ever had.

It is hard to think, it is hard to realize what sort of practice, what sort of death rates we would have in North and South Carolina if it had not been for the influence that this organization represents and the type of practice that they have served as the leaders to develop the standards of practice that they have brought about.

So I shall take great pleasure in pointing out to the people I am to represent in this new field the obligation the state, the public owes to the interests that this Association represents.

I wish, Mr. President, that you would let these remarks go as random remarks and not take them so seriously as to publish them.

Then I hope you ladies and gentlemen who compose this section know me well enough in my work of 16 years to know that I am not going off on an impulsive program, any immature program, but that I realize this large interest Mr. Duke has expressed in the development of this Foundation is something that has got to be developed very carefully, rather slowly. I am quite sure that that is the idea of the Trustees of the Foundation. They are not expecting any rapid development of their interests in the field of medicine —of your interests and our interests—because I believe it is a mutual interest. They are thinking in terms of 25 or 50 years.

They are not going into this matter hastily. I think my business—after I can be relieved of my work in the Board of Health, perhaps in another month or six weeks—will be to travel through

North and South Carolina to become better acquainted with you gentlemen individually and collectively, to get your ideas, to get all possible suggestions bearing upon the future program; and not only the ideas of you gentlemen but the ideas of the men throughout our country who have had to do with hospital development and making hospital service of wider use to the profession and to the public.

That, Mr. President, is, I think, about all that I am justified in saying tonight. I want to assure you of two things—that in my capacity of representing the Foundation I shall be careful to bring to the attention of the Trustees the great service that you gentlemen have conferred upon the people of these two states, and the obligation of the state to the people and the profession represented here; and second that in the development of the program of the Duke Foundation, a great deal of time is going to be consumed before anything is done, in conferring with members of this section individually, possibly collectively, through some of your committee, and with others throughout the country—this country and Canada —who may contribute ideas in the development of this new undertaking.

I thank you very much for this opportunity of appearing before you. (Applause.)

RELATIONS OF STATE BOARD OF HEALTH TO NORTH CAROLINA HOSPITALS

J. Howell Way, M. D., President State Board of Health
Waynesville

Mr. Chairman and ladies and gentlemen: I appear before you with embarrassment, but it is only the embarrassment of a country doctor; that is all. I have no embarrassment whatever as my friends who preceded me indicated they had from the standpoint of appearing before the North Carolina Section of the American College of Surgeons, because as a country doctor I have the distinguished honor of being a general practitioner of medicine, the father, medically speaking, of all of you surgeons and specialists. We are proud of our offspring, we bid you Godspeed in your splendid work, but we beg you not to forget your paternity.

Some months ago through the daily press we were made cognizant of the fact that North Carolina's gifted daughter, Tennessee, was not a believer in evolution. We also were made wise, about the same time, that North Carolina was not ready to say she was not a believer in evolution. I believe that we doctors generally are more or less evolutionists. Certainly we realize that in the affairs of the medical profession there has been a continuous progressive change according, probably, to certain fixed laws, and through the inherent or resident forces, the three primal principles of evolution.

We look back, gentlemen, and we realize the time was when the general practitioner of medicine, like a certain distinguished

North Carolina politician up in the mountain district some years ago, when he said that he carried his politics under his hat. There was a time when the general practitioner of medicine carried his wisdom and his paraphernalia and equipment under his hat or on his person. He was the whole thing. That was the day when mysticism, when priestcraft was a potential factor in the affairs of medicine and dominated in very large part the theories of medicine.

In the evolution of medical affairs that day has passed. While we neglect perhaps to use the mysterious and the psychic as much as we might, we realize more and more today that the doctor is a student and a practitioner of his art in very much more of a material way than he was in former days.

The evolution of medical affairs has brought us many benefits, many opportunities, many helps that a previous generation did not have. In that way we have developed hospitals, and those hospitals, gentlemen—and I am pleased to say it in this distinguished presence—have been brought about through the individual energy, through the spirit of splendid professional altruism that has ever been one of the dominant characteristics of the men of our profession, at the sacrifice of possible future competence in old age, at the sacrifice of comforts and conveniences for the members of your families.

Men I see before me have staked their future financial success in life upon their ability to establish and maintain a hospital. Why? Because they wanted to do better work, they wanted to help their patients in a greater and more material degree than they could otherwise. In other words, they have moved far in advance of society as represented by its government.

I wonder how long the world would have waited to have had courthouses and jails if we had been dependent upon lawyers to build places to house their offices and to try their causes. Not in any spirit of disrespect or irreverence, I wonder, likewise, how long the world would have waited for churches had the world been dependent for their building upon my honored and respected and revered friends, the Christian clergy.

But you doctors, bigger, better and finer of spirit than any other class of men in the world, have seen the opportunity and grasped it and expanded your privileges to the greatest degree possible as private individuals. You have seen the opportunity and embraced it and did the best that you could.

The state has followed in a more or less laggardly way, but, nevertheless, it has followed along that line. The state, you know, some 75 years ago established hospitals for its insane, later for its deaf or its blind, for its epileptic, for its feeble-minded, for its tubercular, and still more recently for its cripples.

These were all, gentlemen, defective classes of society. They were all classes a very large percentage of which the most altruistic, the most optimistic could not hope to become economic producers or yielders in any great degree or contributors to the material pros-

perity, to the financial increment of the state that was doing that to better them.

While the state has in large manner up to the present time neglected to make provision for the acute surgical conditions without hospital care, you gentlemen in your splendid spirit have taken care of those, but the state is moving. The government moves usually more slowly than public sentiment. It follows behind the demands of the people. We are now, I believe, coming to an era when the state will recognize its obligation in making provision in a degree that we could hardly have anticipated a generation ago for the placing of the benefits of modern medicine and surgery within the reach of every man, woman and child from Currituck to Cherokee. (Applause.)

And why? Because it is right, because it is the duty of the state, because the state has no right to expect you gentlemen out of your private finances to meet an expense and a situation that should not be dependent upon the private enterprise or private benefaction but is as much the duty of the state as it is the duty of the state to provide for the education of every boy and every girl in this country.

What is the advantage in attempting to educate the youth of the land unless we are at the same time hand in hand carrying forward provision and measures that will develop a sound body and a sound mind to be the receptacle of the educational effort of the state? In that respect the forces of social evolution are developing and will continue to foster and develop the hospital idea.

Now what has the State Board of Health to do with it? The State Board of Health is the servant, not the master, of the 2,700,000 people of North Carolina, and the 2,600 doctors of North Carolina. The functions of the State Board of Health, as I see it, are to take the benefits that medical science has evolved and transmute them into terms of practical, helpful efficiency to improve the physical status of the people of the State of North Carolina.

Looking upon that as the duty of the State Board of Health, I believe you will each agree with me that the relation of the State Board of Health towards all rational ideas for the development of hospital propositions in North Carolina should be one of not only friendly interest but of cordial and sincere support.

That, gentlemen, I believe, is the attitude of the State Board of Health.

In passing I may be permitted to observe that the State Board of Health looks upon you gentlemen who have founded these various and sundry private hospitals as pioneers, as men who have carried forward the standards of surgical work and of medical work because, gentlemen, the hospital proposition is by no means limited to surgical endeavor. We look upon you as pioneers in that work, as leaders in that work, as men who, no matter what the future ten or fifteen years may develop in the hospitalization idea of North Carolina, were the pioneers and the leaders and the men who paved

the way in showing just what could be done and in demonstrating the fact that there might be great men in the great centers of the country—like New York, Baltimore, Philadelphia and Rochester—but that there were men in the humbler ranks of the profession in the fine old state of North Carolina who were doing those same operations with just as low mortality rate and at less expense and in an environment more agreeable and more homefolksy-like than were the men in the great centers to which I have just referred.

North Carolina appreciates its medical profession. They have often given us ample evidence of that. The State Board of Health appreciates the surgeons of North Carolina, and it realizes fully that in this hospital proposition that will be developed with the cordial, friendly aid and support of the State Board of Health, that not only surgical considerations must be provided for but other things as well.

Take the matter of postgraduate instruction for physicians. Just think a moment what the establishing of a system, state-wide, of hospitals is going to do for the average man in the profession. Now it is not going to abolish private hospitals. Oh, no! Has the establishing of graded schools caused the abolition of private schools, private instruction? Not at all. Has the establishment of state colleges done away with other colleges? Not at all.

They have striven in friendly rivalry to go forward, animated by the common purpose of making the state a better place to live in, making it a better population, a longer-lifed and happier population. There will always be private hospitals because there will always be a demand for them. A great many people will prefer private hospitals, and the establishing of a state-wide system of hospitals, community-owned with an open staff will develop the local medical profession. It will stimulate the average doctor more than any movement that has been made in medical economics in North Carolina in our day and generation.

Take a man out in the country near the city, the county seat. If he can bring his patient into a hospital, first for the question of diagnosis and control the care of that patient, it will mean a great deal to him. It will make him absorb by contact the best things that you men who are the leaders in the cities of North Carolina and the larger towns have. It will increase his self-respect. He can do better work with his patient. He can get a lower mortality rate in his practice if he has the advantages of laboratory and x-ray and of the equipment of the modern hospitals. It will make him a better man. It will make him a better practitioner and, as I just said, the death rate in his practice will be lower. It will not interfere with the many excellent private hospitals that we now have in the state.

Some of those will function as public hospitals with open staffs to the satisfaction of the men who started them, who realize that they saw their duty, they were pioneers in this field and accomplished it, and the state comes along and says, "Well, I am much obliged to

you for what you have been doing, but that is my responsibility and I will try to carry it now."

Now the State Board of Health, gentlemen, sympathizes, is interested in this hospital proposition, both in a general way and in a specific way. It has no desire to push this movement any faster or in any degree irritating to the men who have established hospitals now; but rather in a feeling of sympathetic aid, helping them to work out the communities in which they live the better solution of their problems and the communities' problems.

I thank you, gentlemen, very much for the opportunity of saying *these few words.* (Applause.)

PRESIDENT WHISNANT: The next paper is by Dr. Long, our distinguished Secretary. (Applause.)

SECRETARY LONG: Mr. President, Ladies and Gentlemen, before taking up my paper I would like to say just a word as the Secretary of this organization. In the first place, I want to call your attention to the program as a whole. We have had 19 papers and we will have read 15 of these papers. That is an unusual thing in a surgical or medical society meeting.

Our program has been favorably commented upon not only by the fellows of this section but by many of the members of the State Society.

Another thing to which I wish to call yaur attention is the fact that the transactions of this meeting are being carefully taken down and will be published in the transactions of the State Medical Society. In other words, there will be made a permanent record of them and if you want to get reprints of your papers why you can do so from the publishers.

I think it is hardly necessary to say that the subjects discussed and the manner in which they have been handled here have been equal to that of any organization of its kind. I for one am proud of the work that the men have done here.

We also appreciate what has been said by Dr. Northington and Dr. Rankin and Dr. Way. We are glad to have them here, to have them come to us and take a part in our proceedings. We are glad that the Duke University will probably take up the work of making better the hospitals in North Carolina. I would like for the Duke University to know that the American College of Surgeons, of which we are a part, have been doing just that work all these years. If they will look into what has been accomplished by the American College of Surgeons, I think they will be astonished. I can't go into it now because of the lateness of the hour.

I would also like to say to my dearly beloved friend, Dr. Way, President of the State Board of Health, that if the Duke Foundation or some other organization that has got money would wipe out every private hospital in North Carolina and give us hospital facilities that don't tax the private doctor, there wouldn't be any tears shed. (Applause.)

I for one am opposed to private hospitals and I only run one because I can't help myself. I would rejoice to see the day when we didn't have to have private hospitals. Is that right, Dr. Lawrence?

DR. C. S. LAWRENCE: Right.

SECRETARY LONG: Now I want to call your attention to another fact. I know I voice the sentiments of the Fellows of this section in expressing our appreciation at the presence of so many visitors. We feel honored to have had you here this afternoon and this evening. I also want to say that at the dinner to night there were sixty-two people, which is an unusual record.

So we feel that the North Carolina Section of the American College of Surgeons has been put on the map. It is a going concern. The profession in North Carolina are waking up to the fact that we are building up the work of the hospitals and of surgery in North Carolina. We are not tearing down; we are building up.

SOME OBSERVATIONS ON THE INTRAVENOUS USE OF MERCUROCHROME*

T. V. GOODE, M. D.

JUNIOR SURGEON LONG'S SANATORIUM

STATESVILLE

The acceptance or rejection of any new procedure in surgery or medicine depends not only on what the originator of the plan claims for it, but also on the sum total of experience given in by men at large who try out these procedures. Intravenous injection of medicines date very far back, but practically it was never put into general usage until Erlich discovered Salvarsan, since which time this method using remedial measures of various sorts has rapidly gained in favor until today there are numerous and sundry drugs put up for intravenous administration. The one however, that I wish to discuss briefly, is the intravenous use of mercurochrome in certain infections. I claim no originality in this matter except in so far as my personal experience extends.

Every one who practices surgery is confronted at times with a hopeless general infection. Such a case led me to try mercurochrome intravenously. I had been reading some reports from various sources, chiefly those of Hugh Young of Baltimore and his results were so striking, almost marvelous, and faced by what appeared to be a lethal issue, I began this method of treatment. Since then I have gradually expanded its use and have had some truly wonderful results.

The mode of action of this drug is a somewhat disputed point at present, but I think this is of secondary importance, so long as we get results.

*Read by title.

Certainly in the urinary tract, through which it is chiefly eliminated. I think the action is due to direct germicidal effect. It has been recovered from the urine in the strength of one to five to ten thousand over a period of four hours following injection and by experimentation in the laboratory this strength has been proven to be fatal to bacillus coli, staphylocci and streptococci. Clinically in bonefide cases of bacteriemia it has sterilized the blood, whether it does this by direct bactericidal effect, or whether it does it by liberating some antiseptic property of the blood, I do not know, but this is purely of scientific interest. A poor devil who is dying of blood poisoning cares little how a given treatment acts so long as you save his life and there is no doubt from the cumulative data that this is a life-saving measure in certain cases and this is my plea for a hearing on this subject.

The class of cases that are most benefited by this treatment are severe genito-urinary infections and general infections. For practical purposes it is not necessary to have a positive blood culture, but when a case presents itself with unmistakeable signs of general infection from a clinical standpoint, one is doing wrong if he holds back because the blood culture is negative, or in severe cases if he even waits for a report on the blood culture. I do not mean to treat lightly any and all scientific measures of investigation, but I would rather get a man well than to have a beautiful case report and a dead patient. I merely mention this fact, because at times we are all prone to be a little slow in instituting what we might, at the time, consider rather radical measures, however, there are times in the practice of surgery when a man must forego his caution and conservatism in order to save life. We make it a rule never to take the slightest chance on a human life unless necessity forces us to, then we take them all.

The technique is that of any intravenous therapy. The mercurochrome is given in one per cent solution dissolved in sterile distilled water and introduced into the vein slowly. The dose is five to seven and a half milligrams per kilograms of body weight, which will give you in the average size man of one hundred and fifty pounds thirty-five c.c. of a one per cent solution.

In my experience the reaction following these treatments is variable in the same patient and in different patients and is chiefly of two types. One is febrile with a chill and high temperature 104, or 105 shortly after the injection, this temperature usually subsides in five to six hours and is of no consequence. In fact some men claim that the more pronounced the febril reaction the better the result. The other type is gastrointestinal and consists of a diarrhea, which sets up in three or four hours and continues sometimes for twenty-four hours. In kidney infections it is claimed that better results follow rather small doses on account of the fact that larger doses are prone to produce this diarrhea and thereby a considerable amount of the drug be eliminated through this channel rather than by the kidneys as is the case with smaller doses; how-

ever, in the cases I have treated the patients that had diarrhea did not have relatively larger doses, but for some reason seemed to react in this manner rather than by chill and fever. Some cases of salivation has been reported, but I have seen none. No reaction has appeared to be dangerous.

The first case I wish to report is one of osteomyelitis with general infection.

Case No. 1. White, female, age 12 years. Entered the hospital September 26, 1924. She presented a swelling and extreme tenderness of the left leg and foot; temperature 103; pulse 142 and all the signs of being a very sick child. She had been sick since September 8th and her leg had been stabbed at two or three different places with no result. On account of the precarious condition of the patient, no attempt was made to do a complete operation. Under gas anesthesia the soft parts were opened liberally and a quart or more of pus evacuated, at the same time she was given 250 mgs. of mercurochrome intravenously. Following injection she had a temperature of 104 and a diarrhea which lasted twenty-four hours. During the next two weeks the temperature ranged around 101, she was eating, sleeping, and her general condition was greatly improved. On the twelfth of October the patient began to complain of pain in the left shoulder and upper arm, which was swollen, tender and red, evidently a metastatic condition. We gave her 300 mgs. of mercurochrome intravenously and the shoulder condition improved, but did not entirely disappear, and on the twenty-fourth of October this dose was repeated following which the trouble in the arm completely disappeared. She continued to improve and was allowed to go home with the instructions to return for observation and operation later. In this case it was not a question of saving the leg, but of saving the girl's life, and I am thoroughly convinced that mercurochrome contributed largely to this.

Case No. 2. White, male, age 50 years. Very fat individual; gangrenous appendix, nephritis and diabetes. Entered the hospital October 24, 1924. History of belly pain lasting thirty-six hours. Blood pressure 190/110; urine showed heavy albumen, sugar 2 plus, acetone and diacetic acid present, coarse and finely granular casts, red blood cells and pus cells, blood sugar 16, blood urea 51, white blood count 24,000, poly 86%. Operation being absolutely imperative we proceeded to do it and found a gangrenous unruptured appendix. Of course this man had a stormy convalescence, but he battled along fairly well for a week at which time he developed a diffuse cellulitis of the belly wall extending from one flank to the other and up the sides to the ribs. Of course he was desperately ill and death seemed the only outcome. I gave him 350 gms. of mercurochrome intravenously. November 2nd this was followed by a mild reaction, temperature 103.5. On the 3rd he was given another dose and on the 4th his condition was improved. At this time a stab drain was put in on either side and a great quantity of seropurlent material drained out; the 5th his temperature was ranging from normal to 101, on the 6th he was given another dose with a mild reaction, temperature 101, after which time his convalescence was uninterrupted and he was discharged December 17, 1924. February 6th this year he returned feeling fine and absolutely well so far as the operation was concerned. Urinalysis at this time—acid, 1016, light cloud of

albumen, sugar 1%, and only one finely granular cast found. Blood urea 12, blood sugar 12.

Case No. 3. White, female, age 48 years, married. Entered the hospital June 26, 1924, complaining of post-menapausal bleeding and heavy bearing down feeling in lower abdomen. Examination revealed small fibroid uterus. We did a hysterectomy and removed the appendix. She had no events for two weeks, at which time she began to have chills followed by fever and sweats. Urine showed heavy albumen and abundant pus and a diagnosis of pyelitis was made and she was put on the usual treatment for this condition. She did not respond and gradually grew weaker, very nervous, almost demented at times, having chills at regular intervals always followed by high fever and profuse sweating. On the 26th of July she was given 200 mgs. of mereurochrome intravenously, following which she had a severe chill and temperature 105.5, on the 28th she was given a similar dose with a similar reaction. On the 30th the same procedure was followed, but the reaction was not so severe. Following this treatment she was markedly improved, the urine clearing up to a great extent and the temperature remaining normal. On the 11th of August she began to have fever again, the urine showed abundant pus. At this time I gave her 300 mgs. of mercurochrome which was followed by a chill, temperature 103.4 and diarrhea and vomiting which lasted for two days; this was repeated on the 13th and 15th, followed each time by diarrhea and vomiting. After this her temperature remained normal and the urine showed a light cloud of albumen and only a few leucocytes. She was discharged on August 17th, practically well, and a personal communication from her family physician states that she is absolutely well and that her urine shows no findings whatever.

I have used this in two cases of septic arthritis with good results. I have failed to get results in two cases, both of which were streptococcie hemolytic septicemia; however, these cases were moribund when brought to the hospital.

CONCLUSIONS

First. In the intravenous administration of mercurochrome we have a method of combating certain grave infections which heretofore have not been in general use.

Second. The results obtained are at times marvelous, almost snatching the patient from the jaws of death.

Third. I have seen no ill results either immediate or remote follow its use.

Fourth. Too much time should not be allowed to elapse while waiting for a nice diagnosis.

Fifth. I believe the failures reported were due to the moribund condition of the patients at the time that the treatment was instituted.

SOME PHASES OF THE ACUTE SURGICAL ABDOMEN*

NUMA D. BITTING, M. D., F. A. C. S.
DURHAM

The acute surgical abdomen so often comes like a thief in the night without warning, by accident or by the hand of a designing criminal, that it sorely tests the diagnostic acumen and skill of both internist and surgeon. Alertness, precision and prompt action are many times demanded for the safety of the patient. Immediate operative interference may or may not be required. Upon this decision the life of the patient will depend in some cases. Just at this point we may say that experience and observation, together with certain clinical tests and the x-ray, will be the most reliable guides.

The acute abdomen may be divided into two classes for the convenience of discussion, viz: The acute traumatic abdomen and the acute inflammatory abdomen.

In the first classification we shall refer briefly to lesions produced by mechanical violence from without and mechanical maladjustments within the abdomen. Mechanical violence from without may produce a penetrating wound in the abdominal viscera from any cause, or a simple contusion may produce rupture of some structure without a wound of entrance. Within the past year we have seen three cases of intra-abdominal hemorrhage caused by external blows which produced no wound of entrance. In two of these cases the signs and symptoms were not strongly suggestive of internal injury, yet considerable hemorrhage was present. The other case presented marked signs of internal injury. We mention these cases to suggest the wisdom of exploration when it is impossible to be certain as to the extent of injury.

In cases of mechanical maladjustment within the abdomen, such as torsion of the omentum, or the pedicle of an ovarian cyst, and ruptured tubal pregnancy, the signs and symptoms may be mild but are usually rather severe. In many of these cases a positive diagnosis cannot be made before operation, but the necessity for operation can be determined and this should be decided as early as possible. Very slight abdominal contusions may and often do produce fatal visceral ruptures and in every case injury should be assumed to exist unless proven to the contrary. The patient should be kept under close observation as acute peritonitis may develop in a few hours. Hemorrhage, free gas and fluid in the peritoneal cavity, abdominal rigidity, tenderness, distension, and vomiting, are unmistakable signs. Pain may or may not be present. The hollow viscera ruptured tubal pregnancy, the signs and symptoms may be mild but occurs less frequently but often becomes rapidly fatal.

The acute inflammatory abdomen is preceded by some degree and type of infection. In dealing with this condition one has to

*Read by title.

determine whether there is a lesion in the abdomen, or whether the symptoms are referred to the abdomen from some other part of the body. The crises of Locomoter Ataxia, Chronic Lead Poisoning, Hysteria, Pyelitis, Renal or Ureteral Calculus, and abscesses in the abdominal wall, together with the acute chest lesions may confuse the clinical picture and thereby account for a wrong diagnosis.

What are the chief diagnostic signs and symptoms to be considered in the acute abdomen? Pain beginning abruptly, that is, or has been intense and the location when first experienced will be helpful. Rigidity is perhaps the most important sign. Board-like rigidity following sudden pain and cessation of the peristalsis strongly suggest acute perforation of some viscus. Shock often times develops quickly and is recognized by the rapid, low-pressure pulse, cold sweat, nausea, vomiting, anxious facial expression, and rapid respiration. A few hours later the temperature rises and the polymorphonuclear leucocytes may increase. A slow leak is usually accompanied by more or less pain, a moderate amount of shock and a varying degree of localized muscular rigidity.

In mechanical ileus and intussusception the pain is usually intermittent; the vomiting early in the attack follows taking of water or nourishment; later it occurs without provocation; the peristalsis is greatly increased early, greatly decreased or absent late; and distension usually, but not always, develops. The bowels often act from below the obstruction which may be misleading. Blood may appear in the stools late in the course of intussusception. In one case we found the small intestine looped around the neck of a Mekel's diverticulum completely constricting it. In another case a loosely formed volvulus existed causing complete obstruction while a third case revealed a loop of small intestine incarcerated in the femoral ring which was rapidly approaching a gangrenous state. When acute pus tubes exist the pain is generalized over the abdomen at first, later localized in the lower abdomen and pelvis. Varying degrees of distention and rigidity occur according to the extent and intensity of peritonitis present. Fever and leucocytosis, when present, range higher than in acute appendicitis.

Mesenteric thrombosis is especially interesting because of its gravity, the difficulty of diagnosis and the bad results of treatment. The occlusion may be either arterial or venous. Venous thrombosis is less frequent and less dangerous. If untreated, unless the area is very small, it goes on to gangrene and perforation of the bowel. The early symptoms are mainly those of any intra-abdominal catastrophe. Marked variations in symptoms and the clinical picture account for the failures in diagnosis. Early operation with resection of the affected area, including a safe margin of healthy bowel, offers the best chance of recovery. Mortality ranges from 75 per cent to 90 per cent.

Acute gangrenous and perforative appendicitis gives rise to acute peritonitis more frequently, perhaps, than any other condition. This is due largely to the fact that the laity and some mem-

bers of our profession have come to regard this disease rather lightly and use purgatives. Just here we pause to say that the routine and indiscriminate use of purgatives in acute appendicitis probably produces perforation and peritonitis more frequently than any other cause. Therefore we should exercise due care by withholding purgatives and resort to operation whenever the patient's immediate condition is such as to allow this to be done with safety.

Leucocytosis and temperature elevation, in the acute abdomen, are not always present when the patient is first seen by the surgeon. Therefore their absence cannot be taken as an absolute guide. In fact while the white cell count is still low in the early stages of the catastrophe, before infection becomes wide spread, is the safest time to operate.

The surgeon is so often called upon to decide quickly when and when not to operate. His decision must, necessarily, depend upon the history and immediate condition of the patient, together with a thorough physical examination and analysis of symptoms. Opiates should be withheld until after examination as they mask the signs and symptoms many times and thereby confuse the clinical picture. Too much time should not be wasted in an attempt to make an absolute diagnosis. Try to decide whether an acute surgical condition exists and whether or not the patient's general condition will allow surgical interference. Also whether or not the necessity for operation exists.

In the acute traumatic abdomen too much should not be taken for granted. Slight injuries without penetrating wounds may be watched, provided the signs of hemorrhage are absent and the patient's general condition is good. In cases where foreign bodies have penetrated the abdominal cavity or when, following a blow, the patient's condition suggests shock, hemorrhage or rupture of some viscus, exploration should be done. Shock should be vigorously combatted before or during the operation.

The acute inflammatory abdomen calls for keen discrimination and good surgical judgment. Sudden, severe abdominal pain, accompanied by shock and followed by marked muscular rigidity is strongly suggestive of perforation and requires immediate surgical interference. Usually closure of the perforation and drainage, followed by measures to combat shock, will save a larger percentage of patients than any attempt to do a classical operation. The time element plays a large part in the prognosis. When operated within six to eight hours the mortality will be lowest. After ten or twelve hours it will be much higher.

Operation in gangrene of the gall bladder, empyema or impacted stone in the cystic or common duct should be performed as promptly as possible.

There are few exceptions to the general rule to operate early. Profound shock, advanced general peritonitis with absent peristalsis, greatly distended abdomen and thread-like pulse, acute infection of the gall bladder and acute pus tubes, require delay. Some cases

that appear hopeless may be saved by the use of local anesthesia and the insertion of a drain through a small opening and the Fowler-Murphy treatment.

RELATION BETWEEN SURGEON AND INTERNIST*

A. T. Pritchard, M. D., Asheville

, The practice of Modern Medicine presupposes the coördination of its various branches and the physician who has not this conception of his profession is surely going to fall short of his duty. There is too much in the entire scope of medicine for any one man to be sufficiently equipped in the various branches to render satisfactory service in all of them; to say nothing of the element of time.

It is for this reason that group practice has become so popular, and practically essential for the best interest of the patient; provided, of course, that the patient is not subjected to the expense of needless examinations. It is an advantage for the patient to be first gone over by the internist, and have him properly classify the case, either keeping it under his care or referring it to the correct source for further examination or treatment.

It is easily noted that the internist occupies a most important position and has a great responsibility on his shoulders. With the ever increasing number of specialists, who do not seem to grow less ambitious, as time goes on, I am confidently looking to the internist for safe and conservative influence.

There are too many unfortunate individuals going to the appendiceal, the tonsil, the prostate, et cetera, experts; leaving a souvenir at each place and finally getting around to the internist, or possibly psychiarist, when they should have started with the internist in the beginning and had a proper diagnosis made.

An internist, of necessity, should be a man with a large general experience before embarking in his preferred line. This most forcibly holds true of all the various specialties, and its neglect is the reason why so much unnecessary mutilation is done. The man who jumps out of his hospital internship into a special line is positively not a well-equipped doctor. The number of laporotomies done for appendiceal, ovarian, and other conditions, when the real trouble is often beginning hyper-thyroidism, or some other endocrine disturbance, is very startling, and a sad commentary on our professional stability.

Stomach surgery is often undertaken without sufficient coöperation between internist and surgeon. When indicated, it gives brilliant results; but when not indicated, it makes a very miserable individual out of the patient. The mere fact that a person has a stomach, or duodenal ulcer is certainly not an indication for surgery in all cases. Quite a percentage of these cases are strictly medical and can be more or less permanently relieved by proper advice from a good internal medical man. In passing, the observation of Dr.

*Read by title.

Horsley usually holds good, namely, "That the relief is in proportion to the amount of actual constriction at, or near the pylorus, when surgery is undertaken."

Thyroidectomy is indicated in some cases, either for mechanical relief, or for relief from the systemic effects of hyper-secretion of the thyroid gland. There are quite a few of both types of these cases where some form of therapy, such as x-ray or radium, will give marked results; especially when combined with proper management, bed rest, diet, environmental, and other management. There is no condition that requires more careful study, both on the part of the internist and the surgeon, than a thyroid case. These cases should be carefully selected for operation, the time of operation well defined by metabolic estimation and general consideration, and the post-operative management extremely carefully carried out. It is difficult to say whether the internist's advice is of more importance before or after the operation. There remains considerable doubt as to the proper procedure in thyroid toxic cases, and it behooves us all to move very cautiously with them. This statement is made after a moderate observation; and taking into consideration the opinions of men with very large experience.

Another condition that is of mutual interest to internist and surgeon is syphilis. The latent effects of this disease can produce symptoms which will indicate the necessity for almost any surgical procedure known. Various abdominal conditions, especially gall-bladder affections, are extremely easy to confuse with syphiletic crises. Chronic bone lesions are often caused by it, and other conditions too numerous to mention. Certainly we should be ever on the alert for this possibility. Not long ago, I was very much embarrassed to find a syphiletic infection preventing union after a perineorrhaphy; and, furthermore, I am sure that the question of a damage suit was entertained, because I had failed to have a Wassermann test made before undertaking the operation. I rather shudder to think of the outcome of such a suit, under the circumstances. Thus, self-financial-preservation enters as a reason why internist and surgeon should closely coöperate.

The question of focal infection cannot be overstressed. In this connection a proper and painstaking diagnosis is extremely important. The fact that more than one focus exists is to be borne carefully in mind. Here, again, the necessity of supervision by a competent internist, is most impressive. To promise an individual complete relief from all symptoms by removing infected tonsils, abscessed teeth, or any other single point of infection, without going into all of the aspects of the case, is a practice that is not calculated to strengthen the profession of medicine. An obscure infection of the gall-bladder is probably one of the hardest diagnoses to make, both clinically and at operation. Dr. Judd and others state that "We are often forced to remove gall-bladders with no evidence other than clinical." The difficulty of recognizing gall-bladder pathology by palpation, and even by inspection, has been called to the attention of many of you, I am sure. The appendix, the prostate

gland, and the middle ear are often responsible foci of infection, as well as other organs.

Appendicitis is a condition that has made possible an enormous amount of surgical endeavor; and truly is responsible for a great many serious affections. There are two great dangers to be considered from this condition, first: the immediate effect of acute inflammation, peritonitis, sepsis, etc. Second: and of great importance, is the remote effect, especially the gall-bladder complications; and often duodenal and stomach ulceration. The internist has been of great assistance to me in differentiating these obscure, and difficult chronic diseases. Where the condition is acute, I am of the opinion that probably the surgeon can give the best opinion as he will naturally be more familiar with acute emergencies. The differentiation between right sided pyelitis, kidney stone, and acute or chronic appendicitis, is a problem that requires considerable study by urologist, internist, and surgeon. The co-existence of these conditions can give rise to mistakes on the part of the best medical minds, and I fear that too often, we, unnecessarily, by neglect, are led into error, in this consideration. Several months ago I removed a gangrenous appendix, which was exhibited to the patient's family, and later to him. The urine, before operation, contained a few red blood cells, otherwise negative. The urgency in the case demanded an immediate operation, for an abdominal condition, evidence pointing to the appendix; and we could not account for the few red cells in the urine. The patient made a good recovery. Four weeks after returning home the patient had a severe attack of kidney colic; and a stone in the upper right ureter was removed by dilitation. Too much attention, in this case, to the red blood cells in the urine might have caused a great calamity. Mr. B., age 23; past few years has had various digestive disturbances and soreness over both kidneys, and both sides of lower abdomen. Cystoscopic examination revealed normal bladder: urine from both kidneys loaded with pus. Rest in hospital, under care of urologist; urine cleared up and patient left feeling entirely well. Three days after leaving hospital developed severe attack of abdominal pain; brought to hospital. Elevated white count, rigid belly, etc., and an acutely inflamed appendix was removed and adhesions showed marked former trouble. These two very common cases illustrate the great importance of close coöperation on the part of medical men and surgeons. The number of cases that could be added to these would be almost limitless in the experience of many of you. I would like to stress the fact, that now, when typhoid is so rare, it is well to remember that it still exists, and will cause embarrassment to surgeon and internist if disregarded.

I have endeavored to mention only a few of the most common problems that constantly confront surgeons; and to indicate that internists are of much help in working them out. The larger my experience grows, as a surgeon, the more I am impressed with the necessity for a close contact with good internal medical work, if surgery is to be successful.

In conclusion, I would like to presume to advise that internists follow more of their cases to the operating room and see the actual revealed pathology. Often it will cause great gratification, but, sometimes, there will be some disappointment. In either case the lessons taught by post-mortems will be learned without resorting to this helpful, but undesired, procedure.

CRAWFORD W. LONG, THE DISCOVERER OF SURGICAL ANAESTHESIA

JOHN WESLEY LONG, M. D., GREENSBORO

"Write the things which thou hast
seen and the things which are"

I am persuaded to present to you the story of Crawford W. Long and his priority use of ether as an anaesthetic for two reasons: first, a few months ago Dr. William J. Mayo, editor of Surgery, Gynecology and Obstetrics, asked me to write a biography of Crawford W. Long for publication in that Journal; second, I desire to read into the archives of the Medical Society of the State of North Carolina the record of this most important discovery comparable to any that has ever contributed to the relief of suffering humanity. It is fitting that this Association take cognizance of the matter, since Crawford W. Long was a Southern man and his work in surgical anaesthesia was done in the adjoining state of Georgia.

I have been especially interested in the subject of surgical anaesthesia for ten years or more. I have made quite a collection of books, monograms, pamphlets, newspaper articles, photographs and letters from members of Dr. Long's family and many authors who have investigated the history of surgical anaesthesia.* I shall quote freely, but briefly, from these sources, in some instance verbatim et literatim without marks. I only regret that the limitations of this occasion constrain me from quoting more freely from and making a more liberal use of the literature at hand, since it is pregnant with facts that go to establish the priority of Crawford W. Long in the use of sulphuric ether as a surgical anaesthetic. Fortunately, we have the sworn statements of many eye-witnesses, as well as other reliable data from which to draw.

I hasten to say that I am not related to Crawford W. Long nor shall I speak to you in a controversial spirit, but with an earnest desire to do justice to every claimant for the discovery of surgical anaesthesia. Only recently I wrote my friend, Dr. J. Collins Warren of Boston, asking for data and photographs regarding Dr. Morton's use of ether as an anaesthetic; and he kindly sent them to me.

In order to give my subject its proper historical setting, we shall briefly review the history of surgical anaesthesia from its earliest inception. In Genesis 2-17 we find the words: "And Jehovah

*See bibliography in Discovery of Surgical Anaesthesia—E. M. McGruder, M. D., Charlottesville, Va.

God caused a deep sleep to fall upon the man, and he slept; and he took one of his ribs, and closed up the flesh instead thereof." Ever since the dawn of history men have striven to discover some agent that would produce insensibility to the pain of surgical operations. Ancient history is full of accounts of the use of various sleep producing agents; drugs taken by inunctions, mouth, incantations and "strokings." Some of these remedies undoubtedly had considerable virtue and accomplished their purpose to a certain degree. Among the drugs were opium, mandragora, henbane, cannabis indica and alcohol. Their use gave fruitful theme to the poet's pen as well as to prose writers. Tradition says Aphrodite, to assuage her grief for the death of Adonis, threw herself upon a bed of lettuce.

Shakespeare makes Cleopatra to say:

> "Give me to drink mandragora,
> That I might sleep out this great gap of time.
> My Antony is away."

Du Bartas in 1544 wrote:

> "Even as a surgeon, minding off to cut
> Some cureless limb, before in use he put
> His violent engines on the vicious member,
> Bringeth his patient in a senseless slumber,
> And griefless then (guided by use and art)
> To save the whole cuts off the infected part."

There may be some question as to how the ancient surgeon "bringeth his patient in a senseless slumber," whether by drugs taken internally or by inhalation. But there can be no doubt of the method employed by Ugone Da Lucca, who was born about the middle of the twelfth century, in the use of his "somniferous sponge." He boiled a new sponge with certain drugs "as long as the sun shines in dog days" and "let it be applied to the nostrils of him who is to be operated upon, until he has fallen asleep, and so let the surgery be performed."

The foregoing illustrations could be multiplied many times, but they will suffice to show that surgical anaesthesia, after certain fashions, was known and practiced by the ancients.

Much has been said about even the word "anaesthesia." It is generally believed that it was coined by that incomparable wit and scholar, Dr. Oliver Wendell Holmes. But in Marherr's Praelectiones, published in 1778, we find the word "anaisthesia" with a good description of the condition.

The remarkable thing about the history of surgical anaesthesia is that, while the ancients practiced it, and writers extolled its virtues and poets sang its praises; yet, by the time of the seventeenth century the custom, by whatever method, had passed into oblivion. Physicians of the day and type of Thomas Vicary, Ambrose Pare, Wiseman, Sydenham, et al; men who contributed so much to the development of medicine and surgery did not employ

surgical anaesthesia; because there was nothing of the kind known and accepted by the profession. In the time of the great surgeons just mentioned the only resemblance to anaesthesia was to narcotize the patient with opium and strap him down until he could not wiggle. Anaesthesia from the administration of material substances having failed, the profession turned to mental impressions to produce sleep. In 1843 Elliotson wrote a book entitled "Surgical Operations Performed in the Mesmeric State Without Pain"; and Esdaile announced that he had performed over three hundred major operations in India upon patients rendered insensible by hypnotism. But, like all other ephemeral methods, psychic anaesthesia had its brief day and disappeared from the scene of action.

The pessimistic attitude of the profession at this period is shown by what Velpeau said in 1839: "To escape pain in surgical operations is a chimera which we are not permitted to look for in our day." And Sir Wm. Brodie as late as 1846 wrote: "Physicians and surgeons have been looking in vain from the days of Hippocrates, 460 B. C., down to the present time for the means of allaying or preventing pain in surgery."

This may be accepted as a fair description of the conditions that obtained and the attitude of the medical profession at the time of the discovery of the anaesthetic properties of nitrous oxide and sulphuric ether.

Of course, it is a "twice-told tale" to state that in 1799 Sir Humphrey Davy announced that "inhalation of nitrous oxide produced insensibility" and that "it might be used to advantage during surgical operations." In 1800 William Allen, a lecturer on chemistry, demonstrated in the presence of Sir Astley Cooper and others in Guy's Hospital, London, the phenomena of nitrous oxide inhalation; noting especially the loss of sensation to pain. While that famous surgeon had ears to hear and eyes to see, his spiritual vision failed to discern the wonderful secret that was revealed before him, and for which the profession had searched in vain since the beginning of time. Consequently, the world shuddered on under the agony of the surgeon's knife. Thirty-nine years later Pareira published in his Materia Medica that nitrous oxide would relax spasm, relieve pain and produce stupor. Other men said the same thing. Still no one made application of its anaesthetic properties to surgery until on December 10, 1844; Horace W. Wells, a dentist of Hartford, Conn., saw Dr. Colton, a wandering lecturer, render several persons unconscious by administering nitrous oxide to them. The next day Dr. Wells had Colton come to his office and administer nitrous oxide to him while a brother dentist extracted one of Wells' sound molars. Following this experiment on himself, Wells and other dentists frequently used nitrous oxide successfully.

In January, 1845, by permission of Dr. John C. Warren, Wells undertook to demonstrate his method to the staff and students of the Massachusetts General Hospital. Unfortunately, he pushed the gas only to the stage of delirium, consequently the anaesthesia was

a failure. Wells was hissed from the operating-room. Of course, he was discouraged; and, while he continued to use nitrous oxide in his work as a dentist, he, unfortunately, met with other failures. Brooding over his hard luck, he went insane and committed suicide while in prison in New York City at the untimely age of thirty-three. Certainly the nitrous oxide enthusiasts owe Wells an unending debt of gratitude for his discovery.

Ether set upon the apothecaries' shelves for three hundred years before its chief virtue was discovered. Parker, in 1795, and Thomas Beddoes, in 1797, announced that the inhalation of sulphuric ether would relax spasm and relieve pain. Numerous other writers said as much. Several of them noticed that if pushed too far it would produce stupor. But it does not appear that any one coupled the insensibility produced by ether inhalations with a surgical operation; and the shrieks of pain continued to be heard from every operating-room the world over.

It was also observed that ether would produce the same exhilarating effects that nitrous oxide did. Mitchell mentions this in his chemistry in 1835, stating that it was common practice among the lads of Philadelphia to inhale ether for its exhilarating effects. Ether was employed for this purpose in other parts of America and in Europe as well. Prof. Thompson, of Edinburg, in the early part of the nineteenth century entertained his students by having them inhale both nitrous oxide and ether.

At this stage of my story it is opportune to introduce two other characters whose names will always be associated with the discovery of ether anaesthesia.

Charles Thomas Jackson was a learned physician and distinguished scientist. He graduated at Harvard Medical College in 1829, studied in Paris three years and later dissected two hundred cholera victims in Vienna. He practised medicine successfully in Boston, but later gave up medicine for chemistry, mineralogy and geology in which lines he became very eminent, receiving many honors from numerous states and scientific bodies. In 1838 he disputed with Morse, claiming the invention of the telephone. Jackson became insane and died in 1880 after having been incarcerated in an asylum for seven years.

William Thomas Green Morton graduated at the Baltimore School of Dental Srugery in 1842 and began the practice of dentistry in Boston in partnership with Horace W. Wells, whom we have just mentioned. In 1844 he began studying medicine with Dr. Chas. Thos. Jackson in Boston, he and his bride living in the home of Jackson. In November of that year he matriculated in the Harvard Medical School; but did not graduate in medicine; his studies being interrupted by his interest in surgical anaesthesia. Morton was familiar with the work of his former partner, Wells. He had witnessed his failure with nitrous oxide in the Massachusetts General Hospital. Casting about for some remedy which would relieve the pain of dentistry, it is stated that Morton asked advice

of his friend and preceptor, Dr. Jackson. Jackson suggested a mixture which he (Jackson) prepared in his own drug-store. He also told Morton the kind of apparatus for administering the mixture. Thus you see the close relationship between Wells, Jackson and Morton.

On September 30, 1846, Morton administered the aforesaid mixture by inhalation to a man and painlessly extracted a firmly rooted tooth. Dr. Henry J. Bigelow visited Morton's office and saw him extract a number of teeth under ether. Bigelow arranged with Dr. John C. Warren, Senior Surgeon of the Massachusetts General Hospital to allow Morton to try his new anaesthetic in a regular surgical case. It is not quite clear that Morton knew at this time just what the mixture was, it having been made up by Jackson. Morton said it was "a new gas" which he called "letheon." The next slide shows the operating pavilion of this hospital with those who were present at the time of the first operation, Ocober 16, 1846. The operation was done by Dr. Warren after Morton had rendered the patient insensible by the administration of his secret "letheon." The anaesthesia was a success.

(I have a picture of the sponge with which Morton administered "letheon.")

The Staff of the Massachusetts General Hospital, always true to the ethics of the profession, adopted Morton's method, but before doing so forced him to reveal to them just what "letheon" was. They would not endorse a secret remedy. However, this did not deter Morton, who was a shrewd business man, from securing a patent for his "new gas" under the name of "letheon." The records in the history of this matter show that the next day Morton applied to a Mr. Eddy, an attorney, seeking to obtain a patent for his discovery. When Morton stated his case Eddy told him that not he but Jackson was entitled to the credit of the discovery. But Jackson, being a regular physician, would not allow his name to be associated with a patent. He, therefore, resigned his interest in "letheon" to Morton for 10 per cent of the profits. Morton, on October 27, 1846, published his letters patent and offered to sell his secret remedy, "letheon," at $25.00 per quart with the privilege of using it for five years for $100.00. Wells protested Morton's patent, claiming that he had used nitrous oxide in dentistry in 1844 and ether in surgery with Marcy in 1845; but his protest was of no avail.

We will next introduce Crawford Williamson Long. Long was born November 1, 1815, at Danielsville, Georgia. Both of his grandfathers served in the Revolutionary War and their graves are marked by the United States Government. James Long, Crawford Long's father, was a distinguished citizen of Georgia. Therefore, young Long came of excellent stock, inheriting intelligence, the instincts of a gentleman and sympathy for suffering.

At fourteen Crawford W. Long entered Franklin College, now the University of Georgia, where he took the degree of Master of Arts at nineteen standing second in the Graduating Class. He was

called "The Baby" at college because of his age. His roommate and best friend was Alex. H. Stevens, afterwards Vice-President of the Confederacy. Young Long taught school and took a medical course of one year at the Transylvania University, Lexington, Kentucky. In 1837 he entered the University of Pennsylvania and graduated in two years at the age of twenty-three. During this period Geo. B. Wood was professor at the University of Pennsylvania and one of his strong characteristics was the condemnation of the early publication of cases and action of drugs. Note this fact, please.

After graduating Dr. Long spent eighteen months "walking the hospitals" in New York. Here he saw much painful surgery because, forsooth, there was no other kind. Long made a special study of surgery and by his experience in New York attained the reputation of being a skillful surgeon. He, therefore, had the advantage of a liberal education and training both from a literary and a scientific standpoint. In 1841 ,when only twenty-six years of age, he settled in Jefferson, Jackson County, Georgia; where he acquired an extensive and lucrative practise. Being of a social nature, his office soon became a favorite resort for the young men of the neighborhood.

Remember that at this period nitrous oxide frolics and ether frolics were common throughout certain portions of Europe and America. Dr. Long participated in ether frolics while he was attending the University of Pennsylvania and the hospitals of New York. It appears that through public exhibitions by itinerant lecturers the use of nitrous oxide for its exhilarating effects was known throughout the South. In December, 1841, or January, 1842, certain young men asked Dr. Long if he could procure some laughing-gas for them to inhale. Long told them that he had no means of preparing nitrous oxide nor of storing it, but that he had a drug—sulphuric ether—that was as safe and would produce the same exhilarating effects. One of the young men present had taken ether on a previous occasion, as Long had also done. Dr. Long procured the ether and administered it to those present, also taking it himself. Dr. Long's ether frolics quickly became of frequent occurrence in the community.

R. H. Goodman verifies this statement: "I certify that on the first of January, 1842, I resided in Jefferson, Jackson County, Georgia, and that about that time myself with several other young men were in the habit of meeting at Dr. Crawford W. Long's shop and other rooms in the village and inhaling ether which he administered to us. We took it for its exhilarating effects. On the 20th of January of the same year I removed to Athens in the above-named state where I introduced the inhalation of ether."

I hold in my hand the original letter written by Dr. Long to the druggist, R. H. Goodman, ordering ether for the purpose of an ether frolic. I will throw this letter upon the screen.

Jefferson, Feby. 1st, 1842.

"Dear Bob:

I am under the necessity of troubling you a little. I am entirely out of ether and wish some by tomorrow night if it is possible to receive it by that time. We have some girls in Jefferson who are anxious to see it taken.

Your friend,

C. W. Long."

Dr. Long observed that following ether frolics both he and his companions received painful contusions of which they made no complaint at the time of inhaling the ether. He reasoned that, if a person inhaling ether could receive a severe blow and without feeling any pain at the time, a surgical operation might be done while the patient was under the influence of ether. The more Long thought of this matter, the more thoroughly convinced he became of the soundness of his reasoning. He talked it over with his friends a number of times. He proposed to a young man by the name of James M. Venable, who had two wens on his neck, that he allow Long to etherize him and remove the wens. Venable finally consented to take ether and have one of the wens removed. The operation was performed in Dr. Long's office March 30th, 1842, in the presence of several witnesses. This was the first operation ever done in the world, certainly in modern times, on a patient rendered insensible by the inhalation of a drug.

I am submitting several certificates from those who were present and saw the operation. Two of them are originals. The testimony of eye-witnesses can not be controverted.

Atlanta, DeKalb Co., Ga.,
April 3rd, 1853.

"C. W. Long, M. D.,

It affords me pleasure to certify and I do hereby affirm that I saw you perform an operation upon Mr. James M. Venable, to wit, the cutting out and removing of a tumor from the neck of the said James M. Venable.

The operation was performed when Mr. Venable was under the influence of *sulphuric eather* produced by inhaling the same. I was intimate with Mr. Venable at the time of the operation; and afterwards frequently conversed with him upon the subject and he often told me that the operation produced no pain. The operation was performed in the town of Jefferson, Jackson County, and the State of Georgia in the year *one thousand eight hundred and forty-two.*

Yours, &c.,

W. H. Thurmond."

(Rawls)

"On one occasion during that year I was present with James M. Venable in the office of Dr. C. W. Long in Jefferson, Jackson County, Ga., and witnessed Dr. C. W. Long cut out a tumor from the side of the neck of J. M. Venable while said Venable was fully under the effects of S. Ether inhaled from a towel and without his exhibiting the least symptoms of suffering pain from the operation."

I also show Dr. Long's bill against Venable for the operation and ether. This does not look like a Boston bill.

"James Venable
To Dr. C. W. Long, Dr.
1842

	cts.
January 28—Sulphuric ether	.25
March 30—Ether & Exsecting Tumor	2.00
May 13—Sulphuric Ether	.25
June 6—Exsecting Tumor	2.00

Georgia
Jackson County

I, P. F. Hinton, Clerk of the Superior Court of said County do hereby certify that the above account is a correct copy of an original entry made in his book for Medical Services for the year 1842.

Given under my hand and seal of office this 27th day of March.

P. F. HINTON, *Clerk.*"

The fact that Crawford W. Long, at that time a young man only twenty-six years of age, had put a patient to sleep with ether and performed a surgical operation soon became the talk of the community and the State. The story was noised abroad far and near; indeed, as expressed by some of Long's contemporaries, his discovery became "notorious" throughout that section of the country. McGruder calls attention to the fact that Webster defines "publication" as meaning "Notification to the people at large either by words, writing or printing." By many affidavits it can be shown that Dr. Long made verbal publication to the public and profession in season and out without discrimination. He never ceased to urge physicians to employ ether anaesthesia. His operations were always public to those who should see them, even the family not always being excluded from the operation-room, as most of us do now.

CERTIFICATE OF DR. A. DELAPERRIERE

"I, Ange DeLapierreire, M. D., do certify that I reside in Jefferson, Jackson County, Georgia, in the year 1842, and that sometime in that year I heard James M. Venable then of said State and County, now deceased, speak of Dr. C. W. Long, then of Jefferson in the County of Jackson, Georgia, not of Athens, Georgia, cutting two tumors from his neck while under the influence of the inhalation of Sulphuric Ether without pain of being conscious of the operation.

I do further certify that the fact of Dr. C. W. Long using Sulphuric Ether by inhalation to prevent pain in surgical operations was *frequently spoken of and notorious in the County of Jackson,* State of Georgia in the year 1842.

A. DELAPERRIERE, M. D.

Sworn to and subscribed before me this 30th day of March, 1854.

N. H. PENDERGRASS, J. P.

Jackson County, Georgia.

In May, 1843, Dr. R. D. Moore, of Athens, took three medical students with him to amputate a leg. He said to them: "If I had thought of it before leaving home, I would have tried *Dr. Crawford*

W. Long's great discovery, producing insensibility by the inhalation of ether."

Many other affidavits are at hand, but time will not permit showing them.

During 1842 Long did several other operations under ether anaesthesia and he continued to use his method for both minor and major operations as long as he lived.

The opponents of Long have made much ado because he did not rush into print for the exploitation of his discovery, which was destined to revolutionize surgery. Here is shown the effects of Geo. B. Wood's teaching.

Jenner waited twenty years before publishing his discoveries in vaccination and then had much abuse heaped upon him. I have industriously endeavored to find what Morton ever published about surgical anaesthesia, except his letters patent for his "new gas," called "letheon."

Although Long was slow to publish his wonderful work in the medical journals, his candle was not hid under a bushel. The light of his discovery was destined to reflect its beneficient rays the wide world over. True, the Boston episode, fostered by the prestige of a great university of learning, got the start from the standpoint of being made known in New England, which I admit contains that great city of learning that is justly called "The Hub." But isn't Georgia the equal of Massachusetts or, indeed, of any other State? And is not knowledge made known to the citizens of Georgia just as important and deesrving of the same recognition as if it were told in Massachusetts? Is a discovery published by word of mouth and public demonstration of less significance in Georgia than in New England? Is a great epoch-making discovery to be discredited because it was broadcasted from a Georgia village and not from Boston? I maintain that Long did publish his discovery, in the most natural and practical manner possible; namely, by talking to the people and the profession, by advising other doctors to use ether anaesthesia and by demonstrating to reliable citizens both laity and profession by operations in their presence his method of using ether to prevent the pain of a surgical operation, whenever and wherever he had the opportunity.

We must acknowledge that the credit of priority belongs to Crawford W. Long. Why, he performed his first operation under ether before Morton and graduated even as a dentist, (Morton never was an M. D., except by the courtesy of his Alma Mater) and four and a half years before he claims to have used his "new gas" (letheon) as an anaesthetic. Long used ether as a surgical anaesthetic two and one-half years prior to Wells' use of nitrous oxide. Will any one deny these facts?

Comparative dates:

Morton—Ether—September 30, 1846.

Wells—Nitrous oxide—December 11, 1844.

Long—Ether—March 30, 1842.

Understand, please, that I have no criticism of Wells, Jackson, Morton or their adherents. I honor them for their work and rejoice because of the emoluments that came to them, and I sorrow for the tragedies which caused their death. Most assuredly I entertain only feelings of profoundest admiration for the Massachusetts General Hospital and the illustrious men who have made it to stand for everything that is best in medicine and surgery; but truth is mighty and must prevail.

Let's notice another chapter in the history of surgical anaesthesia. In 1849 Morton had a bill introduced into Congress to award him $100,000 for the discovery of surgical anaesthesia; claiming compensation because the Government had infringed on his "letheon" patent rights. Jackson and Wells' family (Wells died in 1848) contested the matter; Jackson declaring that he suggested the use of ether to Morton; and Wells claiming that he used both nitrous oxide and ether before Morton did. The contest was acrimonious and raged through 1854. Long took no part whatever in the controversy, saying that he wanted no monetary reward for his discovery. Long said: "My only wish about it is to be known as a benefactor of my race." When urged to ask Congress for recognition and financial compensation he said he preferred to have his professional brethren pass upon the merits of the case rather than a law-making body. However, at the earnest solicitation of his friends, he in 1854 wrote to Hon. Dawson, United States Senator from Georgia, simply stating the facts as to his discovery, but making no claim whatever for pecuniary reward. When Senator Dawson read Long's letter in Congress the controversy suddenly fell flat and no money was ever awarded to any one.

At Dawson's suggestion Jackson went to see Dr. Long at his home in Athens. Jackson did as Senator Dawson advised, visited Dr. Long, talked freely with him in the presence of witnesses, examined his books and testimonials and interviewed prominent men in the State as to Long's character and reputation for veracity. After satisfying himself as to the truth of Dr. Long's discovery he proposed to him to put in a joint claim; namely, that he (Jackson) was the first to suggest the use of ether and Long was the first to use it. But Dr. Long declined, saying that he preferred the matter to be adjudged purely on its own merits. Jackson later frankly admitted to Dr. Long and to Senator Dawson, also in a communication to the Boston Medical and Surgical Journal, April 11, 1861, that Long was entitled to the credit of the discovery of surgical anaesthesia.

Mrs. Frances Long Taylor remembers Dr. Jackson's visit to her father and was the custodian of Crawford Long's "ether papers" during the unsettled time of the Civil War.

It is well known that truth can never be absolutely and eternally suppressed. In spite of all opposition it will rise again and shine forth with all its effulgent beauty.

In 1877 Dr. J. Marion Sims in the Virginia Medical Monthly reviewed the story of surgical anaesthesia and declared Long to be the real discoverer. Sims' article focused the attention of the medical world anew on Long and his work and innumerable letters of congratulations and distinguished honors from all over the world came pouring in upon him. We have time to notice only a few. His State (Georgia) Medical Society erected a monument to his memory at Jefferson.

A life-size monument of Long stands in Paris. His portrait hangs in the capital of Georgia, many hospitals, the Anaesthetists' Hall in London. His Alma Mater, the University of Pennsylvania, unveiled a bronze medallion to his honor with imposing ceremonies.

The inscription on this medallion reads:

> "To the memory of Crawford W. Long, who first used ether as an anaesthetic in surgery, March 30, 1842."

The University of Georgia unveiled a monument presented by Dr. Joseph Jacobs.

Eminent men, in this country and abroad, have lifted their voices declaring Long to be the real discoverer of surgical anaesthesia. MaGruder says: "There can also be no doubt that to Crawford Williamson Long belongs the honor of being the first to discover and use Surgical Anaesthesia, and acknowledgment is now made to him the world over, in Great Britain and Ireland, France, Germany, Russia, Australia, Mexico and the United States."

The list of honors that have come to Long is too long to mention by items. Among the foreign contributors, who endorsed Crawford W. Long's discovery, are Dudley W. Buxton, London, England; and Sir George Foy, Dublin, Ireland. The latter is one of our Honorary Fellows. When Sir Frederic Treves operated upon King Edward VII for perityphlitis, the first question he asked on awaking was "Who discovered ether?" He was told, "It was an American, Your Majesty, Dr. Crawford W. Long."

In the ringing words of Henry W. Grady, "It was Crawford W. Long who gave to the world the priceless boon of anaesthesia."

CONSTITUTION AND BY-LAWS

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

APPROVED BY THE MEDICAL SOCIETY OF THE STATE
OF NORTH CAROLINA AT THE ANNUAL SESSION
IN HOT SPRINGS, NORTH CAROLINA
JUNE 2, 1903

REVISED AT THE SEVENTY-SECOND ANNUAL SESSION,
PINEHURST, APRIL 28, 1925

MEMORANDA

At the forty-ninth annual session of the Medical Society of the State of North Carolina in Wilmington, N. C., in 1902, the address of the President, Dr. Robert S. Young, contained the following:

"At the St. Paul (1901) meeting of the American Medical Association, a new Constitution and By-laws were adopted. The American Medical Association earnestly requests the co-operation of our Society in its organization. The officers of that Association asked me to bring the matter before you. I herewith transmit the correspondence, and beg you to authorize a special committee to consider this subject, and report during this meeting."

Page 33, Transactions of the same session, contains the following:

"The committee on the President's message reported in favor of the suggestions made; * * * they recommend that a committee be appointed to draft a constitution along the lines laid down by the American Medical Association, and to report to the next meeting of the Society.

"The President appointed the following committee on a new constitution: Drs. J. Howell Way, M. H. Fletcher, H. A. Royster, J. A. Burroughs, Geo. W. Pressly."

In accordance with the instructions therein contained, the committee carefully considered the matter, and after a most critical study of the whole subject, submitted the Constitution and By-Laws, as printed in the 1903 Transactions, for the action of the Society.

At the fifty-first annual session in Hot Springs, N. C., beginning June 3, 1903, Dr. A. W. Knox, President, the report of the committee was accepted and made the subject of a full and free discussion extending over a portion of two days, when the Society unanimously adopted the Constitution and By-Laws as reported by the committee, and contained in the 1903 Transactions, pages 547-563.

At the seventy-second annual session in Pinehurst, N. C., April 28 and 29, 1925, a committee composed of Drs. C. M. Van Poole, C. W. Banner, and D. A. Garrison reported on certain recommendations, which were approved and are incorporated, with all other amendments heretofore passed, in the printed copy hereafter following.

CONSTITUTION AND BY-LAWS

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adopted at the Fiftieth Annual Session, Hot Springs, N. C.,
June 3, 1903

And Revised at Seventy-Second Annual Session, Pinehurst, April 28-29, 1925

ARTICLE I.—Title of the Society

The name and title of this organization shall be "The Medical Society of the State of North Carolina."

ARTICLE II.—Purposes of the Society

The purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State of North Carolina, and to unite with similar organizations in other states to form the American Medical Association; with a view to the extension of medical knowledge, and to the advancement of medical science; to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interests; and to the enlightenment and direction of public opinion in regard to the great problems of state medicine; so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—Component Societies

Component societies shall consist of those district and county medical societies which shall hold charters from this State Society.

ARTICLE IV.—Composition of the Society

Section 1. This Society shall consist of Members, Delegates, Guests, Honorary Members, and Honorary Fellows.

Sec. 2. Members.—The Members of this Society shall be the members of the component county medical societies.

Sec. 3. Delegates.—Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component county societies in the House of Delegates of this Society.

Sec. 4. Guests.—Any distinguished physician not a resident of this State may become a guest during any annual session upon invitation of the Society, or its Council, and shall be accorded the privilege of participating in all of the scientific work for that session.

Sec. 5. The Honorary Members shall consist of such regular physicians as have won distinction by their contributions to medical science; those elderly

physicians who, prior to their retirement from practice, have displayed a proper interest in the welfare of this Society, or who, by their example, have reflected credit and honor upon the profession. They must be nominated by the Council and receive a two-thirds vote of the members of the House of Delegates present at the meeting at which their names are presented for election. They shall be exempt from all dues and fines, and shall be entitled to all the privileges of the Society, except the right to vote and hold office.

Sec. 6. The Honorary Fellows shall consist of such physicians as have been members of this Society continuously for thirty years, and whose dues have been paid during that time. They shall receive a two-thirds vote of the members of the House of Delegates present at the meeting at which their names are proposed for promotion. They shall be exempt from all dues and fines, and shall be entitled to all the privileges enjoyed by active members in good standing.

ARTICLE V.—House of Delegates.

The House of Delegates shall be the legislative and business body of the Society, and shall consist of (1) delegates elected by the component county societies, and (2) ex-officio the officers of the Society as defined in this Constitution.

ARTICLE VI.—Sections and District Societies.

The House of Delegates may provide for a division of the scientific work of the Society into appropriate sections, and for the organization of such councilor district societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VII.—Sessions and Meetings.

Section 1. The Society shall hold an annual session, during which there shall be held daily not less than two general meetings, which shall be open to all registered members, delegates and guests.

Sec. 2. The time and place for holding each annual session shall be fixed by the House of Delegates.

ARTICLE VIII.—Officers.

Section 1. The officers of this Society shall be a President, three Vice-Presidents, a Secretary-Treasurer, and ten Councilors.

Sec. 2. The President and Vice-Presidents shall be elected for a term of one year. The Secretary-Treasurer and Councilors shall be elected for terms of three years each. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Society shall be elected by ballot, a majority of the votes cast being necessary to elect, by the House of Delegates on the morning of the second day of the annual session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon the annual session and who has not been a member of the Society for the past three years. Any nominee for the office of President shall have been an active member of the Society for five years, including the year of

his election, shall have attended two of three meetings immediately preceding his nomination, including the meeting at which he is nominated, and shall be a member in good standing at the time of his nomination.

ARTICLE IX.—The Board of Medical Examiners.

Section 1. The seven members of the "Board of Medical Examiners of the State of North Carolina" shall be elected by ballot for a term of six years, a majority of the votes cast being necessary to a choice. The election shall be held on the second day of the annual meeting, and the balloting shall continue until the entire number is elected.

Sec. 2. A vacancy occurring from any cause other than expiration of term of office shall be filled by the Board or a quorum thereof.

Sec. 3. The elective members of the State Board of Health, and of the State Board of Medical Examiners for Nurses, shall be elected by ballot on the second day of the session.

ARTICLE X.—Funds and Expenses.

Funds for meeting the expenses of the Society shall be arranged for by the House of Delegates by an equal per capita assessment upon each county society, to be fixed by the House of Delegates, by voluntary contribution, and from the profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual sessions, for publication, and for such other purposes as will promote the welfare of the Society and profession.

ARTICLE XI.—Referendum.

The general meeting of the Society may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates, and the House of Delegates may, by a similar vote of its own members, or after a like vote of the general meeting, submit any such question to the membership of the Society for a final vote; and if the persons voting shall comprise a majority of all the members of the Society, a majority of such votes shall determine the question, and be binding upon the House of Delegates.

ARTICLE XII.—The Seal.

The Society shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII.—Amendments

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates registered at that annual session, provided that such amendment shall have been presented in open meeting at the previous annual session, and that it shall have been sent officially to each component county society at least two months before the session at which final action is to be taken.

BY-LAWS

CHAPTER I.—Membership.

Section 1. All members of the component county societies shall be privileged to attend all meetings and take part in all of the proceedings of the annual sessions, and shall be eligible to any office within the gift of the Society.

Sec. 2. The name of a physician upon the properly certified roster of members or list of delegates, of a chartered county society which has paid its annual assessment, shall be prima facie evidence of his right to register at the annual session in the respective bodies of this Society: Provided, that licentiates of the State Board of Medical Examiners may, if the House of Delegates so elects, at the meeting of the Society at which they receive license, be entitled to register upon payment of the annual dues for that year and be accorded all the privileges of other members for that year, the Secretary-Treasurer of the Society entering their names and so certifying to the secretary of the county society where the said licentiates reside, but said licentiates desiring to continue membership in this Society must affiliate with their local county society.

Sec. 3. No person who is under sentence of suspension or expulsion from any component society of this Society, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Society, nor shall he be permitted to take any part in any of its proceedings until such time as he has been relieved of such disability.

Sec. 4. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge, which shall be evidence of his right to all the privileges of membership at that session. No member or delegate shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

CHAPTER II.—Annual and Special Sessions of the Society.

Section 1. The Society shall hold an annual session at such time and place as has been fixed at the preceding annual session.

Sec. 2. Special sessions of either the Society or House of Delegates shall be called by the President at his discretion, or upon petition of twenty delegates.

CHAPTER III.—General Meetings.

Section 1. The general meetings shall include all registered members, delegates, and guests, who shall have equal rights to participate in the proceedings and discussions; and, except guests and honorary members, to vote on pending questions. Each general meeting shall be presided over by the President, or in his absence or disability, or by his request, by one of the Vice-Presidents. Before it, at such time and place as may have been arranged, shall be delivered the annual address of the President, and the entire time of the session, so far as may be, shall be devoted to papers and discussions relating to scientific medicine.

Sec. 2. The general meeting shall have authority to create committees or commissions for scientific investigations of special interest and importance to the profession and public, and to receive and dispose of reports of the same; but any expense in connection therewith must first be approved by the House of Delegates.

Sec. 3. Except by special vote, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed.

Sec. 4. No address or paper before the Society, except that of the President, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject: Provided, that the terms of this section shall not apply to invited guests.

Sec. 5. All papers read before the Society shall be its property. Each paper shall be deposited with the Secretary-Treasurer when read, and if this is not done it shall not be published.

CHAPTER IV.—House of Delegates.

Section 1. The House of Delegates shall meet annually at the time and place of the annual session of the Society, and shall so fix hours of meeting as not to conflict with the first general meeting of the Society, or with the meeting held for the address of the President, and so as to give delegates an opportunity to attend the other scientific proceedings and discussions so far as is consistent with their duties. The first meeting of the House of Delegates shall be held at 8 p. m. the day preceding the meeting of the Society, at which meeting as much as is possible of the business of the House shall be transacted.

Sec. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every twenty-five members, and one for each major fraction thereof, but each county society holding a charter from this society, which has made its annual report and paid its assessment as provided in this Constitution and By-Laws, shall be entitled to one delegate.

Sec. 3. A majority of the registered delegates shall constitute a quorum, and all of the meetings of the House of Delegates shall be open to members of the Society.

Sec. 4. It shall, through its officers, Council, and otherwise, give diligent attention to and foster the scientific work and spirit of the Society, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

Sec. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

Sec. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically

endeavor to promote friendly intercourse between physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influences.

Sec. 7. It shall encourage post-graduate work in medical centers, as well as home study and research, and shall endeavor to have the results of the same utilized and intelligently discussed in the county societies.

Sec. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, in such a manner that not more than one-half of the delegates shall be elected in any one year.

Sec. 9. It shall, upon application, provide and issue charters to county societies organized to conform to the spirit of this Constitution and By-Laws.

Sec. 10. In sparsely settled sections, it shall have authority to organize the physicians of two or more counties into societies, to be designated by hyphenating the names of two or more counties, so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 11. It may divide the counties of the State into ten councilor districts, and, when the best interest of the Society and profession will be promoted thereby, organize in each a district medical society, to meet midway between the annual sessions of this Society; and members of the chartered county societies, and none others, shall be members in such district societies.

Sec. 12. It shall have authority to appoint committees for special purposes from among members of the Society who are not members of the House of Delegates, and such committees may report to the House of Delegates in person, and may participate in the debate thereon.

Sec. 13. It shall approve all memorials and resolutions issued in the name of the Society before the same shall become effective.

Sec. 14. It shall present a summary of its proceedings to the last general meeting of each annual session, and shall publish the same in the Transactions.

CHAPTER V.—Election of Officers.

Sec. 1. All elections shall be by secret ballot, and a majority of the votes cast shall be necessary to elect: Provided, that when only one name is to be balloted for, the House may suspend the rules and declare the same elected by consent.

Sec. 2. The House of Delegates, at its first meeting, shall select a Committee on Nominations, consisting of ten delegates, no two of whom shall be from the same councilor district. It shall be the duty of this committee to consult with the members of the Society, and to hold one or more meetings, at which the best interests of the Society and of the profession of the State for the ensuing year shall be carefully considered. The committee shall report the result of its deliberations to the House of Delegates in the shape of a ticket containing the names of one member for the office of President, and one member for each of the other offices to be filled at the annual session.

Sec. 3. The report of the Nominating Committee and the election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the morning of the second day of the general session.

Sec. 4. Nothing in this article shall be construed to prevent additional nominations being made by members of the House of Delegates.

Sec. 5. Any person known to have solicited votes for or sought any office within the gift of this Society shall be ineligible for any office for two years.

CHAPTER VI.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Society and of the House of Delegates; shall appoint all committees not otherwise provided for; shall deliver an annual address at such time as may be arranged; shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The Vice-Presidents shall assist the President in the discharge of his duties. In the event of his death, resignation or removal, the Council shall select one of the Vice-Presidents to succeed him.

Sec. 3. The Secretary-Treasurer shall give bond for the trust reposed in him whenever the House of Delegates shall deem it requisite. He shall demand and receive all funds due the Society, together with the bequests and donations. He shall, under the direction of the House of Delegates, sell or lease any estate belonging to the Society, and execute the necessary papers; and shall, in general, subject to such direction, have the care and management of the fiscal affairs of the Society. He shall pay money out of the treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. He shall charge upon his books the assessments against each component county society at the end of the fiscal year; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him.

Sec. 4. The Secretary-Treasurer, acting with the Committee on Scientific Work, shall prepare and issue the programs for and attend all meetings of the Society, and of the House of Delegates, and he shall keep minutes of their respective proceedings in separate record books. He shall be custodian of all record books and papers belonging to the Society. He shall provide for the registration of the members and delegates at the annual sessions. He shall keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society. In so far as it is in his power, he shall use the printed matter, correspondence and influence of his office to aid the councilors in the organization and improvement of the county societies, and in the extension of the power and usefulness of this Society. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as chairman of the committees on Scientific Work and

on Publication. He shall employ such assistants as may be ordered by the Council or the House of Delegates. He shall annually make a report of his doings to the House of Delegates.

In order that the Secretary-Treasurer may be enabled to give that amount of time to his duties which will permit of his becoming proficient, it is desirable that he should receive some compensation. The amount of his salary shall be fixed by the House of Delegates.

CHAPTER VII.—Councilor Districts.

Section 1. To facilitate the more perfect organization of the medical profession, the State of North Carolina is hereby divided by counties into ten councilor districts, as follows:

First District.—Currituck, Camden, Pasquotank, Perquimans, Gates, Chowan, Washington, Tyrrell, Dare, and Hyde.

Second District.—Hertford, Martin, Pitt, Bertie, Beaufort, Lenoir, Jones, Craven, Pamlico, and Carteret.

Third District.—New Hanover, Pender, Onslow, Duplin, Bladen, Sampson, Columbus, and Brunswick.

Fourth District.—Northampton, Halifax, Nash, Edgecombe, Johnston, Wilson, Wayne, and Greene.

Fifth District.—Cumberland, Robeson, Scotland, Richmond, Montgomery, Moore, Harnett, Chatham, Hoke, and Lee.

Sixth District.—Wake, Franklin, Warren, Vance, Granville, Person, Caswell, Alamance, Orange, and Durham.

Seventh District.—Anson, Union, Stanly, Mecklenburg, Cabarrus, Lincoln, Gaston, Cleveland, and Rutherford.

Eighth District.—Rockingham, Guilford, Randolph, Forsyth, Stokes, Surry, Yadkin, Alleghany, Wilkes, and Ashe.

Ninth District.—Davidson, Davie, Rowan, Iredell, Alexander, Catawba, Caldwell, Watauga, Mitchell, Burke, and Avery.

Tenth District.—Buncombe, Yancey, McDowell, Madison, Polk, Henderson, Haywood, Transylvania, Jackson, Swain, Macon, Clay, Graham, and Cherokee.

CHAPTER VIII.—Council.

Section 1. The Council shall hold daily meetings during the annual session of the Society, and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the annual session of the Society for re-organization and for the outlining of work for the ensuing year. At this meeting it shall elect a Chairman and Secretary, and it shall keep a permanent record of its proceedings. It shall, through its Chairman, make an annual report to the House of Delegates at such time as may be provided.

Sec. 2. Each Councilor shall be organizer, peace-maker, and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exists, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district to each annual session of the House of Delegates. The

necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Society.

Sec. 3. Collectively the Council shall be the Board of Censors of the Society. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or to this Society. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a county society, upon which an appeal is taken from the decision of an individual councilor. Its decision in all such cases shall be final.

Sec. 4. The Council shall have the right to communicate the views of the profession and of the Society in regard to health, sanitation, and other important matters to the public and the lay press. Such communications shall be officially signed by the Chairman and Secretary of the Council, as such.

CHAPTER IX.—Committees.

Section 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Publication.

A Committee on Nominations.

A Committee on Finance.

A Committee on Obituaries.

A Committee on Arrangements.

And such other committees as may be necessary. Such committees shall be elected by the House of Delegates, unless otherwise provided.

Sec. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be a member and chairman, and shall determine the character and scope of the scientific proceedings of the Society for each session, subject to the instructions of the House of Delegates or of the Society, or to the provisions of the Constitution and By-Laws. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Society as nearly as practicable.

Sec. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary-Treasurer. Under the direction of the House of Delegates it shall represent the Society in securing and enforcing legislation in the interest of the public health and of the science of medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the profession to promote the general interest in local, State and national affairs and elections. Its work shall be done with the dignity becoming a great profession, and with that wisdom which will make effective its power and influence. It shall have authority to be heard before the entire Society upon questions of great concern at such time as may be arranged during the annual session.

Sec. 4. The Committee on Publication shall consist of three members, of which the Secretary-Treasurer shall be one and chairman, and shall have referred to it all reports on scientific subjects, and all scientific papers and discussions heard before the Society. It shall be empowered to curtail or abstract papers and discussions, and any paper referred to it which may not be suitable for publication in the Transactions may be returned to the author. The Committee shall have authority to arrange for the publication and distribution of the Transactions after receiving competitive bids, and shall use diligence in getting them into the hands of the members. All papers read before the Society shall be the property of the Society.

Sec. 5. The Committee on Nominations shall be appointed and perform its duties in accordance with the provisions of chapter 5, section 2, of these By-Laws. They shall also nominate a Committee on Scientific Work, a Committee on Public Policy and Legislation, a Committee on Publication, a Committee on Obituaries, a Committee on Finance, one member of the Committee on Arrangements, Delegates to the American Medical Association, the Virginia Medical Society, the South Carolina Medical Association, and to such other bodies as the Society may determine. They shall also each third year nominate a Board of ten Councilors.

Sec. 6. The Committee on Finance, to consist of three members, shall examine the accounts of the Secretary-Treasurer and report to the Society, making suggestions as to the amount of assessments for the coming year, the remuneration of the Secretary-Treasurer, and such other suggestions concerning the finances of the Society as they may think proper. The Committee on Obituaries, to consist of three members, shall report to the general meeting of the Society the names of all members dying during the past year, with other data appropriate for memorial publication.

Sec. 7. The Committee on Arrangements shall consist of one member elected by the House of Delegates each year, and two members elected by the county society in the territory in which the annual session is to be held. It shall, by committees of its own selection, provide suitable accommodations for the meeting places of the Society and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the session as occasion my require.

CHAPTER X.—Of the Sections and Voluntary Communications.

Section 1. The newly installed President shall, at the last session of each meeting, appoint a member to serve as chairman of each of the following sections, to-wit: Anatomy and Surgery; Materia Medica and Therapeutics; Practice of Medicine; Obstetrics and Gynecology; Pediatrics; Public Health and Education; Eye, Ear, Nose, and Throat; and Medical Veterans of the World War and Medical Officers' Reserve Corps: Provided, that the President, in making his appointments of chairmen of sections, shall give due consideration to the recommendations offered by the respective sections.

Sec. 2. At any time after the meeting the chairman of each section may appoint three such members as he may select as his assistants, to work up

such items as he may designate, confining himself to the general advancement in his section.

Sec. 3. The chairmen of sections shall send in to the Secretary-Treasurer, not later than thirty days previous to each meeting of the Society, the titles of papers to be presented by themselves and their assistants, to be used by the Committee on Scientific Work in making a program for the meeting.

Sec. 4. No paper shall be read before the Society unless the author be present, unless his absence be due to some unavoidable circumstance. A paper presented by proxy may be referred to the Committee on Publication.

Sec. 5. No paper shall be referred to the Committee on Publication until it has been placed in the hands of the Secretary-Treasurer; and the Secretary-Treasurer shall not return any paper accepted by the Society without the consent of the Society, and then he shall take a receipt for the same.

Sec. 6. No paper shall be received by or read before this Society that has been presented to any other society, excepting only a component society of this Society, or that has been offered for publication in any journal, and in the case of any paper accepted, the author is supposed to have invested with the Society all rights to its ownership.

Sec. 7. No paper shall be published in the Transactions of this Society unless approved by the Committee on Publication; and any paper rejected by said committee shall be returned to the author through the Secretary-Treasurer of the Society.

Sec. 8. It is to be understood that the Society is not to be considered as endorsing all the views and opinions advanced by the authors of papers published in the Transactions of the Society.

CHAPTER XI.—Assessments and Expenditures.

Section 1. An assessment of three dollars per capita on the membership of the component societies is hereby made the annual dues of this Society, which amount shall be collected by the secretary of each county society from each of its members on or before the first day of March and forwarded to the Secretary-Treasurer of the State Society before the first day of April in each year. The secretary of each county society shall forward a statement of its assessment, together with its roster of all officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary-Treasurer before the first day of April each year.

Sec. 2. Any county society which fails to pay its assessment, or make the reports required, on or before the date above stated, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the State Society or of the House of Delegates, or receive the volume of Transactions, until such requirements have been met.

Sec. 3. All motions or resolutions appropriating money shall specify a definite amount, or so much thereof, as may be necessary for the purpose indicated, and must be approved by the Council and House of Delegates on a call of the ayes and noes.

CHAPTER XII.—Rules of Conduct.

The principles set forth in the Declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XIII.—Rules of Order.

The deliberations of this Society shall be governed by parliamentary usage as contained in Roberts' Rules of Order, unless otherwise determined by a vote of its respective bodies.

CHAPTER XIV.—County Societies.

Section 1. All county societies now in affiliation with the State Society, or those that may hereafter be organized in this State which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, upon application to the House of Delegates, receive a charter from and become a component part of this Society.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the House of Delegates, and shall be signed by the President and Secretary-Treasurer of this Society. The House of Delegates shall have authority to revoke the charter of any component county society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made with the aid of the councilor for the the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county society shall judge of the qualifications of its own members, but, as such societies are the only portals to this Society and to the American Medical Association, every reputable and legally registered white physician who is practicing, or who will agree to practice, non-sectarian medicine, shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right of appeal to the Council and to the House of Delegates.

Sec. 7. In hearing appeals, the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts; but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at concilliation and compromise shall precede all such hearings.

Sec. 8. When a member in good standing in a component society moves to another county in this State, his name, upon request, shall be transferred

without cost to the roster of the county society into whose jurisdiction he moves.

Sec. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

Sec. 10. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral, and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The younger members shall be especially encouraged to do post-graduate and original research work and to give the Society the first benefit of such labors. Official position and other preferments shall be unstintingly given to such members.

Sec. 12. At some meeting in advance of the annual session of this Society, prior to the first day of April, each county society shall elect a delegate or delegates, with alternates, to represent it in the House of Delegates of this Society in the proportion of one delegate to each twenty-five members or major fraction thereof, and the secretary of the society shall send a list of such delegates with alternates to the Secretary-Treasurer of this Society before the first day of April preceding the annual sessions.

Sec. 13. The secretary of each county society shall keep a roster of its members, and a list of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. He shall furnish an official report containing such information, upon blanks supplied him for the purpose, to the Secretary-Treasurer of this Society before the first day of April in each year, and at the same time that the dues accruing from the annual assessment are sent in. In keeping such roster, the secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

CHAPTER XV.—Order of Business.

Section 1. General Meetings.

The President, or, in his absence, one of the Vice-Presidents, in the order of their rank, shall call the Society to order, or in the absence of all these officers, a presiding officer shall be chosen by a majority of the members present.

Address of Welcome. Response.

Any business requiring early attention may be introduced by permission and without discussion referred to the Council, the House of Delegates, or the appropriate committee.

The President's Address.

Reports of Committees.

Reports from the House of Delegates.

Reports from the Council.

Written communications upon medical subjects may be read and discussed. This shall include reports from sections as arranged each year by the program.

Oral Communications and Clinical Reports read and discussed.

Final Reports from the Council.

Final Reports from the House of Delegates.

Final Reports from Committees.

Report to the General Meeting from the House of Delegates appointing the time and place of next session.

Reports from the House of Delegates of the Election of Officers and Committees.

Appointment of Chairmen of Sections by President.

Adjournment.

Sec. 2. The House of Delegates.

The President, or, in his absence, one of the Vice-Presidents, in the order of their rank, shall call the House to order, or, in the absence of all these officers, a presiding officer shall be chosen by a majority of the members present.

Roll Call.

The President's Message.

Report of Committee on Credentials.

Reports of Committees.

Reports of Officers.

Reports of the Council.

Communications from the General Meeting of the Society.

Reports from the County Societies.

Appointment of Committee on Nominations.

New Business.

General Discussion of Measures for the Advancement of the Profession.

Election of Officers and Committees.

Selection of Place and Time of Next Meeting.

Unfinished Business.

Adjournment.

(While there may at times appropriately be a variation from the details of the above outline of business procedure, it is the intention of these By-Laws to so arrange that the work other than the purely scientific part of the Society's proceedings be done in the Council and House of Delegates, and the general meetings of the Society be devoted exclusively to scientific work.)

CHAPTER XVI.—Amendments.

These By-Laws may be amended at any annual session by the majority vote of all the delegates present at that session, after the amendment has lain upon the table for one day.

PRINCIPLES OF MEDICAL ETHICS

OF THE

AMERICAN MEDICAL ASSOCIATION

1925

Explanatory.—"The principles set forth in the declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public."—Constitution and By-Laws, Medical Society of the State of North Carolina, adopted at Hot Springs, N. C., June 2, 1903; Chapter XII—Rules of Conduct. Also see report Committee on Ethics, pages 37 and 38, Trans. N. C. Med. Soc., 1903.

PRINCIPLES OF MEDICAL ETHICS

CHAPTER I—The Duties of Physicians to Their Patients

THE PHYSICIAN'S RESPONSIBILITY

Section 1.—A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals.

PATIENCE, DELICACY AND SECRECY

Sec. 2—Patience and delicacy should characterize all the acts of a physician. The confidences concerning individual or domestic life entrusted by a patient to a physician and the defects of disposition or flaws of character observed in patients during medical attendance should be held as a trust and should never be revealed except when imperatively required by the laws of the State. There are occasions, however, when a physician must determine whether or not his duty to society requires him to take definite action to protect a healthy individual from becoming infected, because the physician has knowledge, obtained through the confidences entrusted to him as a physician, of a communicable disease to which the healthy individual is about to be exposed. In such a case, the physician should act as he would desire another to act toward one of his own family under like circumstances. Before he determines his course, the physician should know the civil law of his commonwealth concerning privileged communications.

PROGNOSIS

Sec. 3.—A physician should give timely notice of dangerous manifestations of the disease to the friends of the patient. He should neither exaggerate nor minimize the gravity of the patient's condition. He should assure himself that the patient or his friends have such knowledge of the patient's condition as will serve the best interest of the patient and the family.

PATIENTS MUST NOT BE NEGLECTED

Sec. 4.—A physician is free to choose whom he will serve. He should, however, always respond to any request for his assistance in an emergency or whenever temperate public opinion expects the service. Once having under-

taken a case, a physician should not abandon or neglect the patient because the disease is deemed incurable; nor should he withdraw from the case for any reason until a sufficient notice of a desire to be released has been given the patient or his friends to make it possible for them to secure another medical attendant.

CHAPTER II.—The Duties of Physicians to Each Other and to the Profession at Large

Article I.—Duties to the Profession

MUST UPHOLD HONOR OF PROFESSION

Section 1.—The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness. A physician should not base his practice on an exclusive dogma or sectarian system, for "sects are implacable despots; to accept their thraldom is to take away all liberty from one's action and thought." (Nicon, father of Galen.)

MEDICAL SOCIETIES

Sec. 2.—In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy and means in order that these societies may represent the ideals of the profession.

DEPORTMENT

Sec. 3.—A physician should be "an upright man, instructed in the art of healing." Consequently, he must keep himself pure in character and conform to a high standard of morals, and must be diligent and conscientious in his studies. "He should also be modest, sober, patient, prompt to do his whole duty without anxiety; pious without going so far as superstition, conducting himself with propriety in his profession and in all the actions of his life." (Hippocrates.)

ADVERTISING

Sec. 4.—Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. This does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is equally unprofessional to procure patients by indirection through solicitors or agents of any kind, or by indirect advertisement, or by furnishing or inspiring newspaper or magazine comments concerning cases in which the physician has been or is concerned. All other like self-laudations defy the traditions and lower the tone of any profession and so are intolerable. The most worthy and effective advertisement possible, even for a young physician, and especially with his brother physicians, is the establishment of a well-merited reputation for professional

ability and fidelity. This cannot be forced, but must be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not *per se* improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

It is unprofessional to promise radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients.

PATENTS AND PERQUISITES

Sec. 5.—It is unprofessional to receive remuneration from patents for surgical instruments or medicines; to accept rebates on prescriptions or surgical appliances, or perquisites from attendants who aid in the care of patients.

MEDICAL LAWS—SECRET REMEDIES

Sec. 6.—It is unprofessional for a physician to assist unqualified persons to evade legal restrictions governing the practice of medicine; it is equally unethical to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way.

SAFEGUARDING THE PROFESSION

Sec. 7.—Physicians should expose without fear or favor, before the proper medical or legal tribunals, corrupt or dishonest conduct of members of the profession. Every physician should aid in safeguarding the profession against the admission to its ranks of those who are unfit or unqualified because deficient either in moral character or education.

Article II.—Professional Services of Physicians to Each Other

PHYSICIANS DEPENDENT ON EACH OTHER

Section 1.—Experience teaches that it is unwise for a physician to treat members of his own family or himself. Consequently, a physician should always cheerfully and gratuitously respond with his professional services to the call of any physician practicing in his vicinity, or of the immediate family dependents of physicians.

COMPENSATION FOR EXPENSES

Sec. 2.—When a physician from a distance is called on to advise another physician or one of his family dependents, and the physician to whom the service is rendered is in easy financial circumstances, a compensation that will at least meet the traveling expenses of the visiting physician should be proffered. When such a service requires an absence from the accustomed field of professional work of the visitor that might reasonably be expected to entail a pecuniary loss, such loss should, in part at least, be provided for in the compensation offered.

ONE PHYSICIAN TO TAKE CHARGE

Sec. 3.—When a physician or a member of his dependent family is seriously ill, he or his family should select a physician from among his neighboring

colleagues to take charge of the case. Other physicians may be associated in the care of the patient as consultants.

Article III.—Duties of Physician in Consultations

CONSULTATIONS SHOULD BE ENCOURAGED

Section 1.—In serious illness, especially in doubtful or difficult conditions, the physician should request consultations.

CONSULTATION FOR PATIENT'S BENEFIT

Sec. 2.—In every consultation, the benefit to be derived by the patient is of first importance. All the physicians interested in the case should be frank and candid with the patient and his family. There never is occasion for insincerity, rivalry or envy, and these should never be permitted between consultants.

PUNCTUALITY

Sec. 3.—It is the duty of a physician, particularly in the instance of a consultation, to be punctual in attendance. When, however, the consultant or the physician in charge is unavoidably delayed, the one who first arrives should wait for the other for a reasonable time, after which the consultation should be considered postponed. When the consultant has come from a distance, or when for any reason it will be difficult to meet the physician in charge at another time, or if the case is urgent, or if it be the desire of the patient, he may examine the patient and mail his written opinion, or see that it is delivered under seal, to the physician in charge. Under these conditions, the consultant's conduct must be especially tactful; he must remember that he is framing an opinion without the aid of the physician who has observed the course of the disease.

PATIENT REFERRED TO SPECIALIST

Sec. 4.—When a patient is sent to one specially skilled in the care of the condition from which he is thought to be suffering, and for any reason it is impracticable for the physician in charge of the case to accompany the patient, the physician in charge should send to the consultant by mail, or in the care of the patient under seal, a history of the case, together with the physician's opinion and an outline of the treatment, or so much of this as may possibly be of service to the consultant; and as soon as possible after the case has been seen and studied, the consultant should address the physician in charge and advise him of the results of the consultant's investigation of the case. Both these opinions are confidential and must be so regarded by the consultant and by the physician in charge.

DISCUSSIONS IN CONSULTATION

Sec. 5.—After the physicians called in consultation have completed their investigations of the case, they should meet by themselves to discuss conditions and determine the course to be followed in the treatment of the patient. No statement or discussion of the case should take place before the patient or friends, except in the presence of all the physicians attending or by their common consent; and no opinions or prognostications should be delivered as a result of the deliberations of the consultants which have not been concurred in by the consultants at their conference.

ATTENDING PHYSICIAN RESPONSIBLE

Sec. 6.—The physician in attendance is in charge of the case and is responsible for the treatment of the patient. Consequently, he may prescribe for the patient at any time and is privileged to vary the mode of treatment outlined and agreed on at a consultation whenever, in his opinion, such a change is warranted. However, at the next consultation, he should state his reasons for departing from the course decided on at the previous conference. When an emergency occurs during the absence of the attending physician, a consultant may provide for the emergency and the subsequent care of the patient until the arrival of the physician in charge, but should do no more than this without the consent of the physician in charge.

CONFLICT OF OPINION

Sec. 7.—Should the attending physician and the consultant find it impossible to agree in their view of a case another consultant should be called to the conference or the first consultant should withdraw. However, since the consultant was employed by the patient in order that his opinion might be obtained, he should be permitted to state the result of his study of the case to the patient, or his next friend, in the presence of the physician in charge.

CONSULTANT AND ATTENDANT

Sec. 8.—When a physician has attended a case as a consultant, he should not become the attendant of the patient during that illness except with the consent of the physician who was in charge at the time of the consultation.

Article IV.—Duties of Physicians in Cases of Interference

CRITICISM TO BE AVOIDED

Section 1.—The physician, in his intercourse with a patient under the care of another physician, should observe the strictest caution and reserve; should give no disingenuous hints relative to the nature and treatment of the patient's disorder; nor should the course of conduct of the physician, directly or indirectly, tend to diminish the trust reposed in the attending physician. In embarrassing situations, or wherever there may seem to be a possibility of misunderstanding with a colleague, the physician should always seek a personal interview with his fellow.

SOCIAL CALLS ON PATIENT OF ANOTHER PHYSICIAN

Sec. 2.—A physician should avoid making social calls on those who are under the professional care of other physicians without the knowledge and consent of the attendant. Should such a friendly visit be made, there should be no inquiry relative to the nature of the disease or comment upon the treatment of the case, but the conversation should be on subjects other than the physical condition of the patient.

SERVICES TO PATIENT OF ANOTHER PHYSICIAN

Sec. 3.—A physician should never take charge of or prescribe for a patient who is under the care of another physician, except in an emergency, until after the other physician has relinquished the case or has been properly dismissed.

CRITICISM TO BE AVOIDED

Sec. 4.—When a physician does succeed another physician in the charge of a case, he should not make comments on or insinuations regarding the practice of the one who preceded him. Such comments or insinuations tend to lower the esteem of the patient for the medical profession and so react against the critic.

EMERGENCY CASES

Sec. 5.—When a physician is called in an emergency and finds that he has been sent for because the family attendant is not at hand, or when a physician is asked to see another physician's patient because of an aggravation of the disease, he should provide only for the patient's immediate need and should withdraw from the case on the arrival of the family physician after he has reported the condition found and the treatment administered.

WHEN SEVERAL PHYSICIANS ARE SUMMONED

Sec. 6.—When several physicians have been summoned in a case of sudden illness or of accident, the first to arrive should be considered the physician in charge. However, as soon as the exigencies of the case permit, or on the arrival of the acknowledged family attendant or the physician the patient desires to serve him, the first physician should withdraw in favor of the chosen attendant; should the patient or his family wish some one other than the physician known to be the family physician to take charge of the case the patient should advise the family physician of his desire. When, because of sudden illness or accident, a patient is taken to a hospital, the patient should be returned to the care of his known family physician as soon as the condition of the patient and the circumstances of the case warrant this transfer.

A COLLEAGUE'S PATIENT

Sec. 7.—When a physician is requested by a colleague to care for a patient during his temporary absence, or when, because of an emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as soon as possible.

RELINQUISHING PATIENT TO REGULAR ATTENDANT

Sec. 8.—When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter.

SUBSTITUTING IN OBSTETRIC WORK

Sec. 9.—When a physician attends a woman in labor in the absence of another who has been engaged to attend, such physician should resign the patient to the one first engaged, upon his arrival; the physician is entitled to compensation for the professional services he may have rendered.

Article V.—Differences Between Physicians

ARBITRATION

Section 1.—Whenever there arises between physicians a grave difference of opinion which cannot be promptly adjusted, the dispute should be referred

for arbitration to a committee of impartial physicians, preferably the Board of Censors of a component county society of the American Medical Association.

Article VI.—Compensation

LIMITS OF GRATUITOUS SERVICE

Section 1.—The poverty of a patient and the mutual professional obligation of physicians should command the gratuitous services of a physician. But endowed institutions and organizations for mutual benefit, or for accident, sickness and life insurance, or for analogous purposes, have no claim upon physicians for unremunerated services.

CONTRACT PRACTICE

Sec. 2.—It is unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient or which interfere with reasonable competition among the physicians of a community. To do this is detrimental to the public and to the individual physician, and lowers the dignity of the profession.

SECRET DIVISION OF FEES CONDEMNED

Sec. 3.—It is detrimental to the public good and degrading to the profession, and therefore unprofessional, to give or to receive a commission. It is also unprofessional to divide a fee for medical advice or surgical treatment, unless the patient or his next friend is fully informed as to the terms of the transaction. The patient should be made to realize that a proper fee should be paid the family physician for the service he renders in determining the surgical or medical treatment suited to the condition, and in advising concerning those best qualified to render any special service that may be required by the patient.

CHAPTER III.—The Duties of the Profession to the Public

PHYSICIANS AS CITIZENS

Section 1.—Physicians, as good citizens and because their professional training specially qualifies them to render this service, should give advice concerning the public health of the community. They should bear their full part in enforcing its laws and sustaining the institutions that advance the interests of humanity. They should co-operate especially with the proper authorities in the administration of sanitary laws and regulations. They should be ready to counsel the public on subjects relating to sanitary police, public hygiene and legal medicine.

PUBLIC HEALTH

Sec. 2.—Physicians, especially those engaged in public health work, should enlighten the public regarding quarantine regulations; on the location, arrangement and dietaries of hospitals, asylums, schools, prisons and similar institutions; and concerning measures for the prevention of epidemic and contagious diseases. When an epidemic prevails, a physician must continue his labors for the alleviation of suffering people, without regard to the risk to his own health or life or to financial return. At all times, it is the duty of the physician to notify the properly constituted public health authorities of every case of communicable disease under his care, in accordance with the laws, rules and regulations of the health authorities of the locality in which the patient is.

PUBLIC WARNED

Sec. 3.—Physicians should warn the public against the devices practiced and the false pretensions made by charlatans which may cause injury to health and loss of life.

PHARMACISTS

Sec. 4.—By legitimate patronage, physicians should recognize and promote the profession of pharmacy; but any pharmacist, unless he be qualified as a physician, who assumes to prescribe for the sick, should be denied such countenance and support. Moreover, whenever a druggist or pharmacist dispenses deteriorated or adulterated drugs, or substitutes one remedy for another designated in a prescription, he thereby forfeits all claims to the favorable consideration of the public and physicians.

CONCLUSION

While the foregoing statements express in a general way the duty of the physician to his patients, to other members of the profession and to the profession at large, as well as of the profession to the public, it is not to be supposed that they cover the whole field of medical ethics, or that the physician is not under many duties and obligations besides these herein set forth. In a word, it is incumbent on the physician that, under all conditions, his bearing toward patients, the public, and fellow practitioners should be characterized by a gentlemanly deportment and that he constantly should behave toward others as he desires them to deal with him. Finally, these principles are primarily for the good of the public, and their enforcement should be conducted in such a manner as shall deserve and receive the endorsement of the community.

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN MEDICAL ASSOCIATION

CONSTITUTION

ARTICLE I.—Title and Definition

The name of this corporation is the American Medical Association; it is a federacy* of its constituent associations.

ARTICLE II.—Objects

The objects of the Association are to promote the science and art of medicine and the betterment of public health.

ARTICLE III.—Constituent Associations

Constituent associations are those state and territorial medical associations which are, or which may hereafter be, federated to form the American Medical Association, in accordance with this Constitution and By-Laws.

ARTICLE IV.—Component Societies

Component societies are those county or district medical societies contained within the territory of and chartered by the respective constituent associations.

ARTICLE V.—House of Delegates

Section 1.—The legislative powers of the association reside in the House of Delegates. The House of Delegates shall transact all business of the Association not otherwise specifically provided for in this Constitution and By-Laws, and shall elect the general officers.

COMPOSITION

Sec. 2.—The House of Delegates is composed of delegates elected by the constituent associations and by the Sections of the Scientific Assembly, and of delegates from the Medical Departments of the Army and the Navy and the Public Health Service, appointed by the Surgeon-General of the respective departments. The Trustees, the ex-Presidents of the Association and the members of the several Councils shall be ex-officio members of the House of Delegates without the right to vote, provided that members of the Councils who are also elected delegates may exercise all of the rights of elected delegates.

Sec. 3.—The total voting membership of the House of Delegates shall not exceed 150. The medical departments of the Army and of the Navy, and the United States Public Health Service and the scientific sections shall each be entitled to one delegate, and the remainder shall be apportioned among the

*Federacy: A federation or union of several states under one central authority, consisting of delegates from each state in matters of general polity but self-governing in local matters. American Dictionary and Cyclopedia.

Constituent Associations in proportion to their actual active membership as hereinafter provided in the By-Laws.

ARTICLE VI.—General Officers

Section 1.—The general officers of the Association shall be a President, a Vice-President, a Secretary, a Treasurer, a Speaker and a Vice-Speaker of the House of Delegates, and nine Trustees.

Sec. 2.—These officers shall be elected annually and, except the Trustees, shall serve for one year or until their successors are elected and installed.

Sec. 3.—Two Trustees shall be elected annually, except every fifth year, when but one shall be elected, each to serve for five years, or until his successor is elected and installed; provided, that at the session of the House of Delegates at which this amendment is adopted, two Trustees shall be elected to serve three years and one to serve four years; that at the next annual session, one Trustee shall be elected to serve three years and two to serve four years; and that at the next subsequent session two Trustees shall be elected to serve four years and one to serve five years. No Trustee shall serve for more than two consecutive terms, but a Trustee elected to serve an unexpired term shall not be regarded as having served a term unless he has served three or more years. (Amended 1924).

ARTICLE VII.—Trustees

The Board of Trustees shall have charge of the property and financial affairs of the Association and shall perform such duties as are prescribed by law governing directors of corporations.

ARTICLE VIII.—Members and Fellows

MEMBERS OF THE AMERICAN MEDICAL ASSOCIATION

Section 1.—Members in good standing of the constituent associations are the members of the American Medical Association, subject, however, to the provisions of these By-Laws regarding members.

FELLOWS OF THE SCIENTIFIC ASSEMBLY

Sec. 2.—Members in good standing of the Association who have complied with the provisions of the By-Laws regarding Fellows, are Fellows of the Scientific Assembly of the American Medical Association.

ARTICLE IX.—Scientific Assembly

Section 1.—The Scientific Assembly of the American Medical Association is the convocation of its Fellows for the presentation and discussion of subjects pertaining to the science and art of medicine.

Sec. 2.—The Scientific Assembly is divided into sections, each section representing that branch of medicine described in its title.

Sec. 3.—New sections may be created or existing sections discontinued by the House of Delegates. The Scientific Assembly and its sections shall be conducted in accordance with the rules and regulations set forth in this Constitution and By-Laws.

ARTICLE X.—Annual Sessions

The House of Delegates and the Scientific Assembly shall meet annually at times and places to be fixed by the House of Delegates. The time and place of any of these sessions may, however, be changed by the unanimous action of the Board of Trustees at any time prior to two months of the time selected for that session. A session may be held at any place in the United States.

ARTICLE XI.—Funds

Funds may be raised by an equal assessment of not more than ten dollars annually on each of the members; from the Association's publications, and in any other manner approved by the Board of Trustees. Funds may be appropriated by the Board of Trustees to defray the expenses of the Association; to carry on its publications; to encourage scientific investigations and for any other purpose approved by the Board of Trustees.

ARTICLE XII.—Amendments

The House of Delegates may amend this Constitution at any annual session, provided the proposed amendment shall have been introduced at the preceding annual session, and provided three-fourths of the voting members of the House of Delegates registered at the session at which action is taken vote in favor of such change or amendment.

BY-LAWS

BUSINESS AND LEGISLATION

CHAPTER I.—Qualifications, Term, Apportionment and Registration of Delegates

DELEGATES MUST HAVE BEEN FELLOWS OF THE AMERICAN MEDICAL ASSOCIATION TWO YEARS

Section 1.—A member of the House of Delegates must have been a member of the American Medical Association and a Fellow of the Scientific Assembly for at least two years next preceding the session of the House of Delegates at which he is to serve.

TERM

Sec. 2.—Delegates and alternates from constituent associations shall be elected for two years. Constituent associations entitled to more than one representative shall elect them so that one-half, as near as may be, shall be elected each year. Delegates and alternates elected by the sections, or delegates appointed from the United States Army, United States Navy and United States Public Health Service, shall hold office for two years. (Amended 1923.)

APPORTIONMENT OF DELEGATES

Sec. 3.—At the annual session of 1903, and every third year thereafter, the House of Delegates shall appoint a committee of five on reapportionment, of which the Speaker and the Secretary shall be members. The committee shall apportion the delegates among the constituent associations in accordance with Article 5, Section 3, of the Constitution, and in proportion to the mem-

bership of each constituent association as recorded in the office of the Secretary of the American Medical Association on April 1 of the year in which the apportionment is made. This apportionment shall take effect at the next succeeding annual session, and shall prevail until the next triennial apportionment, whether the membership of the constituent association shall increase or decrease.

REGISTRATION OF DELEGATES

Sec. 4.—Each delegate representing a constituent association, before being seated, shall deposit with the committee on credentials a certificate signed by the Secretary and under the seal of the constituent association stating that he has been regularly elected a delegate by that constituent association. Each delegate from a section shall present similar credentials signed by the chairman and the secretary of the section which he represents. Each delegate from a government service shall present credentials stating he has been duly appointed by the Surgeon-General of the department which he represents.

A DELEGATE, ONCE SEATED, TO RETAIN HIS SEAT FOR THE ENTIRE SESSION

Sec. 5.—A delegate whose credentials have been accepted by the committee on credentials and whose name has been placed on the roll of the House, shall remain a delegate of the body which he represents until final adjournment of the session, and his place shall not be taken by any other delegate or alternate.

CHAPTER II.—Procedure of House of Delegates

ORDER OF BUSINESS

Section 1.—The following shall be the order of business, unless otherwise ordered:

1. Call to order by the Speaker.
2. Roll call.
3. Reading and adopting the minutes.
4. Reports of officers.
5. Reports of committees.
6. Unfinished business.
7. New business.

Sec. 2.—During the annual presentation of the report of each Council or Bureau the privileges of the floor of the House of Delegates, for a period of five minutes, shall be extended to each Council secretary and Bureau head. (Amended 1924.)

LIMIT OF TIME FOR INTRODUCTION OF NEW BUSINESS

Sec. 3.—Unanimous consent shall be required for the introduction of new business at the last meeting of the annual session of the House of Delegates, except when presented by the Board of Trustees, the officers of the sections, or the sections. All new business so presented shall require three-fourths affirmative vote for adoption.

RULES OF ORDER

Sec. 4.—The House of Delegates shall be governed by Roberts' Rules of Order when not in conflict with these By-Laws or with the rules of the House.

QUORUM

Sec. 5.—Twenty voting members of the House of Delegates shall constitute a quorum.

CHAPTER III.—Meetings of the House of Delegates

REGULAR SESSIONS

Section 1.—The House of Delegates shall meet annually on the Monday preceding the opening of, and at the same place as, the Scientific Assembly of the Association.

SPECIAL SESSIONS

Sec. 2.—Special sessions of the House of Delegates shall be called by the Speaker, on written request of twenty-five or more delegates representing one-third or more of the constituent associations; or on request of a majority of the Board of Trustees. When a special session is thus called, the Secretary shall mail a notice to the last known address of each member of the last House of Delegates at least twenty days before such special session is to be held, in which notice shall be specified the time and place of meeting and the items of business to be considered. No other business shall be transacted at the special session than that specified in the call.

CHAPTER IV.—Nomination and Election of Officers, Affiliate, Associate and Honorary Fellows, Installation of Officers

NOMINATIONS

Section 1.—Nominations for office shall be made orally, but a nominating speech must not exceed two minutes. The Treasurer shall be nominated by the Board of Trustees. No member of the House of Delegates nor general officer of the Association shall be eligible to the office of President or Vice-President.

QUALIFICATIONS OF GENERAL OFFICERS

Sec. 2.—The General Officers must have been members of the Association and Fellows of the Scientific Assembly for at least two years next preceding their election. The Speaker and Vice-Speaker of the House may but need not be elected from among the members of the House.

METHOD OF HOLDING ELECTIONS

Sec. 3.—All elections shall be by ballot, and a majority of the votes cast shall be necessary to elect. In case no nominee receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of all the votes cast, when he shall be declared elected. However, when there is only one nominee for an office, a majority vote without ballot shall elect.

TIME OF ELECTION

Sec. 4.—The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the afternoon of the fourth day of the Annual Session of the House of Delegates (Thursday), provided, however, that the House of Delegates may change the time of election by action taken at least one day in advance of that to which the election is to be changed, and provided further that the motion to change the time of election shall be supported by two-thirds of the delegates registered.

The election of Affiliate, Associate and Honorary Fellows shall immediately follow the election of officers. Not more than three Honorary Fellows shall be elected at any annual session except on special recommendation of the Council on Scientific Assembly and the unanimous vote of the House.

ASSOCIATE FELLOWS

Sec. 5.—Applications for Associate Fellowship from foreign physicians and from American physicians engaged in missionary and similar labors in foreign countries must be approved by the Judicial Council; applications from dentists must be approved by the Section on Stomatology, from pharmacists by the Section on Pharmacology and Therapeutics, and from representative teachers and students of science allied to medicine by the officers of a section.

AFFILIATE AND HONORARY FELLOWS

Sec. 6.—Nominations for Affiliate Fellowship shall be made by the constituent association of which the nominee is a member, and nominations for Honorary Fellowship shall be made by the sections, and must be submitted to the House of Delegates not later than the second day of the Scientific Assembly. These nominations shall be referred without debate to the Council on Scientific Assembly, which shall consider the scientific attainments and professional character of the applicants and report to the House of Delegates.

INSTALLATION

Sec. 7.—The general officers of the Association, except the President, shall assume their duties at the close of the last meeting of the annual session at which they are elected.

INSTALLATION OF THE PRESIDENT

Sec. 8.—The President shall be installed at the opening general meeting of the Scientific Assembly of the annual session following that at which he was elected.

CHAPTER V.—Duties of Officers

PRESIDENT

Section 1.—The President shall preside at the general meetings of the Scientific Assembly. At the opening general meeting of the Scientific Assembly next following his election, he shall deliver an address on such matters as he may deem of importance to the public and to the medical profession. He may attend the meetings of and make suggestions to the House of Delegates or the Board of Trustees. With the approval of the Board of Trustees he is authorized to appoint committees for emergencies not otherwise pro-

vided for. He shall nominate members of standing committees for election by the House of Delegates.

VICE-PRESIDENT

Sec. 2.—The Vice-President shall officiate for the President during the latter's absence, or at his request. In case of death, resignation or removal of the President, the Vice-President shall officiate during the unexpired term.

SPEAKER

Sec. 3.—The Speaker shall preside at the meetings of the House of Delegates and shall perform such duties as custom and parliamentary usage require. He shall have the right to vote only when his vote shall be the deciding vote.

VICE-SPEAKER

Sec. 4.—The Vice-Speaker shall officiate for the Speaker in the latter's absence or at his request. In case of death, resignation, or removal of the Speaker, the Vice-Speaker shall officiate during the unexpired term.

SECRETARY

Sec. 5.—The Secretary, in addition to the duties ordinarily devolving on the secretary of a corporation and those delegated in other sections of these By-Laws, shall give due notice of the time and place of annual and special sessions of the House of Delegates and of the Scientific Assembly in *The Journal of the American Medical Association*. He shall send an official notice of each annual or special session to the secretary of each constituent association and to the secretary of each section. He shall keep the minutes of the House of Delegates. He shall notify members of committees of their appointment and of the duties assigned them. He shall verify the credentials of the members of the House of Delegates and shall provide a registration book in which shall be recorded the name of each delegate in attendance at each session, together with that of the constituent association, government service or section which he represents. He shall prepare for publication the official programs for the Scientific Assembly, and shall perform such other duties as may be directed by the House of Delegates, or the Board of Trustees.

TREASURER

Sec. 6.—The Treasurer shall be the custodian of all moneys, securities and deeds belonging to the Association which may come into his possession, and shall hold the same subject to the direction and disposition of the Board of Trustees. He shall give to the Board of Trustees a suitable bond for the faithful performance of his trust, and shall receive for his service a salary to be fixed by the Board of Trustees.

OFFICERS TO COMPLETE BUSINESS OF SESSION

Sec. 7.—All business of each annual session shall be completed by the officers (including section officers) who have served during the session.

CHAPTER VI.—Board of Trustees

BOARD OF TRUSTEES

Section 1.—The Trustees at their first meeting after the annual session of the House of Delegates, shall organize by electing a chairman and a

secretary, and the chairman shall appoint such committees as may be created by the Board. It shall be the duty of this Board to provide for and to superintend the publication of *The Journal of the American Medical Association*, and of all proceedings, transactions and memoirs of the Association. It shall have full discretionary power to omit from *The Jounal*, in part or in whole, any paper that may be referred to it by any of the sections. It shall appoint a general manager and an editor of *The Journal*, which two positions may be held by one person, and such assistants as may be necessary, and shall determine their salaries and the terms and conditions of their employment. All resolutions or recommendations of the House of Delegates pertaining to the expenditure of money must be approved by the Board of Trustees before the same shall become effective. During the annual session of the Association the Board shall hold meetings as often as may be deemed necessary by the chairman, and all matters referred to it by the House of Delegates shall be reported on within twenty-four hours, if so requested by the House. The Board of Trustees shall have the accounts of the Treasurer and of *The Journal* office audited annually or oftener, if deemed necessary, and shall make an annual report to the House of Delegates, which report among other items shall specify the character and cost of all the publications of the Association during the year and the amount of all property belonging to the Association. Should a vacancy occur, on account of death or otherwise, among the general officers of the Association, the Board of Trustees may fill such vacancy until the next annual session of the House, unless otherwise provided for in this Constitution and By-Laws. The Board of Trustees shall fix the salary of the Secretary and of the Treasurer. Regular meetings of the Board shall be held immediately after the annual session of the House of Delegates, and on the first Friday in the month of February of each year. Special meetings of the Board may be called at any time by the chairman, or by five members of the Board, by mailing a written or printed notice to the last known address of each trustee, at least five days before such meeting is to be held, in which notice shall be specified, in general terms, the object of such special meeting, and no other business shall be transacted thereat; provided, that the proceedings of any meeting of the Board at which all the members are present or which are approved in writing by every member of the Board shall be valid without previous notice having been given. Five members of the Board shall constitute a quorum. During the intervals between the sessions of the House of Delegates the Board of Trustees shall supervise the action of committees constituted by the action of the House and may appoint emergency committees.

The President, the President-Elect and the Speaker of the House of Delegates shall be ex-officio members of the Board of Trustees, but without the right to vote. (Amended 1923.)

TO ESTABLISH BUREAU OF HEALTH AND PUBLIC INSTRUCTION

Sec. 2.—The Board of Trustees shall establish a bureau, to be known as the Bureau of Health and Public Instruction, to carry on such activities in the field of health and the dissemination of information in relation thereto as the House of Delegates may direct or the Board of Trustees, in the absence of such directions, may determine. (Adopted 1923.)

TO PUBLISH A JOURNAL FOR THE LAITY

Sec. 3.—The Board of Trustees shall publish a journal for the dissemination among the laity of information concerning health and matters of popular interest concerning medical matters, the editorial policies of which shall be determined by said Board, with the coöperation of an editorial advisory committee, consisting of five members, appointed by said Board from among the Fellows of the Association. (Adopted 1923.)

TRUSTEES TO CONTROL SESSION

Sec. 4.—The Board of Trustees shall have full control of all arrangements for the annual sessions and shall provide meeting places for the House of Delegates, the general meetings and the scientific sections. It shall also have control of all exhibits. It may appoint a local committee of arrangements, which shall be at all times under the Board.

CHAPTER VII.—Committees

CLASSIFICATION OF COMMITTEES

Section 1.—Committees shall be classified as (*a*) Standing Committees, (*b*) Reference Committees, and (*c*) Special Committees. The standing committees shall be nominated by the President and elected by the House of Delegates, unless otherwise provided for. Reference and special committees shall be appointed by the Speaker as provided in these By-Laws. Special committees may be created by the House of Delegates to perform the special functions for which they are created; they shall be appointed by the Speaker unless otherwise ordered by the House. Committees acting during the interval between the sessions of the House of Delegates shall be subject to the Board of Trustees. In case of vacancies in committees occurring during the interval between annual sessions, the President or the Speaker, according to the committee on which said vacancies occur, shall have the power to appoint Fellows to fill the vacancies until the next annual session.

The Speaker of the House of Delegates may appoint from the members of the House such additional committees as he may deem expedient in advance of the annual meeting to expedite the business of the House of Delegates. All such committees shall be subject to the approval of the House of Delegates. (Amended 1923.)

MEMBERSHIP OF COMMITTEES

Sec. 2.—Any Fellow shall be eligible to serve on standing or special committees. Reference committees shall be appointed from the members of the House of Delegates. Members of committees not members of the House of Delegates shall have the right to present their reports in person to the House and to participate in the debate thereon, but shall not have the right to vote. (Amended 1924.)

STANDING COMMITTEES

Sec. 3.—Standing committees shall be the following:

(*a*) Judicial Council.

(*b*) Council on Medical Education and Hospitals.

(*c*) Council on Scientific Assembly. (Amended 1923.)

CHAPTER VIII.—Organization of Standing Committees or Councils

MEMBERSHIP

Section 1.—The Standing Committees, or Councils, shall consist of five members, each elected for five years. The term of office of the members of each committee shall terminate in succession, one each year, and the House of Delegates shall elect annually, on nomination by the President, one member to each committee to fill the vacancy. The members of the Council on Scientific Assembly shall be chosen, as far as practical, from ex-section officers representing different sections. The President-Elect, the Secretary of the Association and the Editor of *The Journal* shall be *ex-officio* members of this Council.

OFFICERS

Sec. 2.—The Councils shall organize and elect their own officers except that the Secretary of the Association shall be the Secretary of the Judicial Council and of the Council on Scientific Assembly, and that on nomination by that Council, the Board of Trustees shall elect annually, to serve one year, a secretary of the Council on Medical Education and Hospitals, and shall fix his salary. (Amended 1923.)

EXPENDITURES

Sec. 3.—Each Council shall submit to the Board of Trustees a budget of its expenses for the fiscal year, and the Board shall make such appropriation for each Council as it may see fit. Each Council shall be limited in its expenditures to the appropriation made for it by the Board of Trustees and no Council shall expend or contract to expend any money in excess of its appropriation without the consent and approval in writing of the Board of Trustees.

RULES AND REGULATIONS

Sec. 4.—Each Council may make its own rules to govern its action; such rules shall not conflict with these By-Laws nor with standing rules or resolutions of the House of Delegates.

COMMITTEES

Sec. 5.—Each Council shall have authority to appoint committees subject to the approval of the Board of Trustees for any purpose within the jurisdiction of the Council.

HEADQUARTERS

Sec. 6.—The headquarters of each Council shall be at the general office of the Association where the transactions of the Council shall be recorded.

REPORTS

Sec. 7.—Each Council shall submit annually a report of its work to the House of Delegates. All such reports, so far as possible, shall be transmitted thirty days before the annual session to the Secretary of the Association, who shall have them printed for distribution to the members of the House of Delegates.

CHAPTER IX.—Duties of Standing Committees or Councils

THE JUDICIAL COUNCIL

Section 1.—The judicial power of the Association shall be vested in the Judicial Council, whose decision shall be final. This power shall extend to and

include (1) all questions involving Fellowship in the Scientific Assembly or the obligations, rights and privileges of Fellowship; (2) all controversies arising under this Constitution and By-Laws to which the American Medical Association is a party; and (3) controversies (*a*) between two or more recognized constituent associations, (*b*) between a constituent association and a component society or societies of another constituent association or associations or a member or members of another constituent association or other constituent associations, and (*c*) between members of different constituent associations. In all these cases the Judicial Council shall have original jurisdiction.

In all cases which arise (a) between a constituent association and one or more of its component societies; (b) between component societies of the same constituent association; (c) between a member or members and the component society to which said member or members belong, or (d) between members of different component societies of the same constituent association, the Judicial Council shall have appellate jurisdiction in questions of law and procedure but not of fact.

The Judicial Council shall have jurisdiction on all questions of ethics and in the interpretation of the laws of the organization.

The Judicial Council may, at its discretion, investigate general professional conditions and all matters pertaining to the relations of physicians to one another and to the public, and may make such recommendations to the House of Delegates or the constituent associations as it deems necessary.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Sec. 2.—The functions of the Council on Medical Education and Hospitals shall be: (1) To investigate conditions of Medical Education, Hospitals and associated subjects and to suggest means and methods by which the same may be improved. (2) To endeavor to further the realization of such suggestions as may be approved by the House of Delegates.

COUNCIL ON SCIENTIFIC ASSEMBLY

Sec. 3.—The function of the Council on Scientific Assembly shall be: (1) To secure coöperation between the sections. (2) To pass upon questions of policy in relation to scientific work and to investigate and report on scientific questions, either on its own initiative or when such questions are referred to it by the House of Delegates. (3) To stimulate the development of the sections. (4) To consider at first hand applications for new sections, or for changes in existing sections, and to report to the House of Delegates. (5) To appoint officers for meetings making up the section on miscellaneous topics. (6) To arrange the programs for the general meetings of the Scientific Assembly.

CHAPTER X.—Reference Committees

APPOINTMENT

Section 1.—Immediately after the organization of the House of Delegates at each annual session the Speaker of the House of Delegates shall appoint from the members of the House such committees as may be deemed expedient by the House of Delegates. Each committee shall consist of five members, unless otherwise provided, the chairman to be specified by the Speaker. These committees shall serve during the session at which they are appointed.

REFERENCES

Sec. 2.—Resolutions, measures and propositions presented to the House of Delegates shall be referred to the appropriate committee which committee shall report to the House before final action shall be taken, unless otherwise unanimously ordered by the House of Delegates.

ORGANIZATIONS

Sec. 3.—Each Reference Committee shall, as soon as possible after the adjournment of each meeting, or during the meeting, if necessary, take up and consider such business as may have been referred to it, and shall report on the same at the next meeting or when called on to do so. Three members shall constitute a quorum.

COMMITTEES

Sec. 4.—The following committees are hereby provided:

(1) A Committee on Sections and Section Work, to which shall be referred all matters relating to the sections and the section work. (The members of the Council on Scientific Assembly shall be members, *ex officio,* of this committee.)

(2) A Committee on Rules and Order of Business, to which shall be referred all matters regarding rules governing the action, methods of procedure and order of business of the House of Delegates.

(3) A Committee on Medical Education, to which shall be referred all matters relating to medical colleges and medical education. (The members of the Council on Medical Education and Hospitals shall be members, *ex officio,* of this committee.)

(4) A Committee on Legislation and Public Relations, to which shall be referred all matters relating to state and national legislation, memorials to Legislatures, to the United States Congress, or to the President of the United States. (The Executive Secretary of the Bureau of Legal Medicine and Legislation shall be, *ex officio,* a member of this committee. (Amended 1923.)

(5) A Committee on Hygiene and Public Health, to which shall be referred all matters relating to hygiene and public health.

(6) A Committee on Amendments to the Constitution and By-Laws, to which shall be referred all proposed amendments to the Constitution and By-Laws. (The members of the Judicial Council shall be members, *ex officio,* of this committee.)

(7) A Committee on Reports of Officers, to which shall be referred addresses of the President and of the Speaker of the House of Delegates and the reports of the Secretary and of the Board of Trustees.

(8) A Committee on Credentials, to which shall be referred all questions regarding the registration and the credentials of delegates.

(9) A Committee on Miscellaneous Business, to which shall be referred all business not otherwise disposed of.

SCIENTIFIC ASSEMBLY

MEMBERSHIP AND FELLOWSHIP

CHAPTER XI.—Membership and Fellowship

TENURE OF MEMBERSHIP

Section 1.—Membership in this Association shall continue only so long as the individual is a member of a constituent association. When the Secretary shall be officially informed by the secretary of the constituent association through which a member holds membership in this Association that the member is not in good standing, the Secretary shall remove the name of said member from the membership roll of the American Medical Association. A member of a constituent association who removes to and engages in the practice of medicine at a location in another state in which there is a constituent association, shall forfeit his membership in this Association and the Secretary shall remove his name from the roster of members of the American Medical Association unless within one year after such change of residence he becomes a member of the constituent association in the state to which he has moved; provided that when the member is also a Fellow of the Scientific Assembly the By-Law defining the effect on Fellowship of removal to another state shall have precedence over this section.

FELLOWS

Sec. 2.—Any member of this Association, who on the prescribed form shall apply for Fellowship and subscribe for *The Journal,* paying the annual Fellowship dues for the current year, shall be a Fellow.

Commissioned medical officers of the United States Army, United States Navy and the United States Public Health Service shall be Fellows of this Association so long as they are engaged actively in their respective service, and thereafter if they have been retired on account of age or physical disability, or, after long and honorable service, under the provisions of an Act of Congress. These Fellows shall not be required to pay Fellowship dues and shall not receive *The Journal of the American Medical Association* except by personal subscription. (Amended 1924.)

EFFECT ON FELLOWSHIP ON REMOVAL TO ANOTHER STATE

Sec. 3.—A Fellow who changes the location at which he practices medicine, from the state through whose constituent association he holds membership in the American Medical Association to another state in which there is a constituent association, is eligible to membership in the component society of his new location on the presentation of a transfer card and an official statement that his dues have been paid in full in the society in which he holds membership; provided that no evidence which would otherwise disqualify him for membership arise. He shall forfeit his Fellowship in the American Medical Association one year after such change of location, unless he becomes a member of the constituent association of the state to which he has moved. Provided, however, that if the component society into whose territory such Fellow has moved shall refuse him membership, the Fellow shall be privileged to appeal to the Judicial Council of this Association to determine whether or not he be guilty of any act that warrants the enforcement of the provisions of this section. Pending the decision of such appeal he

shall retain his Fellowship in the American Medical Association through his original state association. A member of a constituent state association who is located for the purpose of practicing medicine in a state adjacent to that through the association of which he holds Fellowship in the American Medical Association may become and may be continued a Fellow of the American Medical Association, provided the Council of the constituent association of the state in which he is practicing medicine waives jurisdiction over his membership

AFFILIATE, ASSOCIATE AND HONORARY FELLOWS

Sec. 4.—There shall be Affiliate, Associate and Honorary Fellows, who shall be elected and shall qualify in accordance with the provisions set forth in these By-Laws.

AFFILIATE FELLOWS

Sec. 5.—A Fellow who has been a Fellow for a continuous term of fifteen (15) years, who is not less than sixty-five (65) years of age, and who is an honorary member of his component society and of his constituent association, or is connected with these organizations in an equivalent manner whereby he is relieved from the payment of dues or fees, on request of his constituent association may be made an Affiliate Fellow by a majority vote of the House of Delegates of this Association. Affiliate Fellows shall be privileged to participate in the Scientific Assembly of the Association; they shall not be required to pay Fellowship dues and shall not receive *The Journal of the American Medical Association* except by personal subscription. Affiliate Fellowship shall be conditioned on such an Affiliate Fellow continuing the relationship with his constituent association herein defined.

ASSOCIATE FELLOWS

Sec. 6.—The following may be elected in accordance with Section 5, Chapter IV, to Associate Fellowship: Physicians who are members of the chartered national medical societies of foreign countries adjacent to the United States; American physicians located in foreign countries and engaged in medical missionary and similar educational and philanthropic labors; dentists holding the degree of D.D.S. who are members of state or local dental societies, and pharmacists who are active members of the American Pharmaceutical Association; and representative teachers, students of science allied to medicine, resident in the United States, and not eligible to regular membership. Associate Fellows shall enjoy the same privileges as regular Fellows, and shall be subject to the same conditions.

HONORARY FELLOWS

Sec. 7.—Physicians of foreign countries may be elected Honorary Fellows by the House of Delegates in accordance with Section 6, Chapter IV.

INVITED GUESTS

Sec. 8.—Scientists resident in the United States who are not engaged in the practice of medicine, and eminent physicians and scientists from foreign countries, may be invited by the general officers or by the officers of a section, to attend an annual session of the Scientific Assembly and participate in the scientific work and social functions. They shall be designated as Invited Guests.

TENURE OF FELLOWSHIP

Sec. 9.—Fellowship in this Association shall continue only so long as the individual is a member. When the Secretary shall be officially informed that the Fellow is not a member, the Secretary shall remove the name of such Fellow from the Fellowship roll of the American Medical Association and shall notify the Fellow of the action taken, together with the reason therefor. Fellowship shall be further conditioned on a Fellow conducting himself in accordance with this Constitution and By-Laws, and Principles of Medical Ethics of this Association.

DELINQUENCY

Sec. 10.—Any Fellow who, for one year, has failed to pay his annual Fellowship dues, shall forfeit his Fellowship thirty days after notice of his delinquency has been mailed to his last known address by the Secretary.

FELLOWSHIP RESTORED

Sec. 11.—Any former Fellow who complies with Section 2, Chapter XI, shall be reinstated on payment of his indebtedness, including his subscription for the current calendar year.

CHAPTER XII.—Registration

Fellows, Affiliate, Associate and Honorary Fellows and Invited Guests only shall be allowed to register or take part in the work of any of the sections of the Scientific Assembly of the Association.

A Fellow shall be eligible to register at an annual session only after he has paid all of his current indebtedness.

A Fellow shall not be permitted to take part in the proceedings of the Association or of any of the sections until he has registered his name and address in the registration office.

A Fellow on registering shall designate the section in which he wishes to be enrolled, but shall be enrolled in one section only at any Scientific Assembly.

CHAPTER XIII.—General Meetings

GENERAL MEETINGS

Section 1.—General meetings of the Scientific Assembly may be arranged by the Council on Scientific Assembly with the approval of the Board of Trustees.

THE OPENING GENERAL MEETING

Sec. 2.—The opening general meeting shall be held on the evening of Tuesday of the week of the annual session, and shall be presided over by the President or, in his absence or at his request, by the Vice-President.

PRESIDENT'S ADDRESS

Sec. 3.—The President, immediately after he is inducted into office, shall deliver an address before the opening general meeting, and his recommendations, if he makes any, shall go to the House of Delegates for action.

CHAPTER XIV.—Sections

TITLES OF SECTIONS OF SCIENTIFIC ASSEMBLY

Section 1.—The Scientific Assembly of the American Medical Association shall be divided into the following sections:

1. Practice of Medicine.
2. Surgery, General and Abdominal.
3. Obstetrics, Gynecology and Abdominal Surgery.
4. Ophthalmology.
5. Laryngology, Otology and Rhinology.
6. Diseases of Children.
7. Pharmacology and Therapeutics.
8. Pathology and Physiology.
9. Stomatology.
10. Nervous and Mental Diseases.
11. Dermatology and Syphilology.
12. Preventive and Industrial Medicine and Public Health.
13. Urology.
14. Orthopedic Surgery.
15. Gastro-Enterology and Proctology.
16. Miscellaneous Topics.

OFFICERS OF SECTIONS

Sec. 2.—The officers of each section shall consist of a chairman, a vice-chairman and a secretary and such other officers as the section shall deem advisable. These shall serve for one year, or until their successors are elected and qualified; provided, that each section may elect its secretary to serve a longer time at its discretion. Each section shall also elect biennially one delegate and one alternate to the House of Delegates of the American Medical Association to serve for two years.

ELECTION OF OFFICERS

Sec. 3.—The election of officers of the several sections shall be the first order of business of the final meeting of the section at each Scientific Assembly. To participate in the election of any section a Fellow must have indicated on registering that he desires to affiliate with such section, and must have recorded his name and address on the section register book.

DUTIES OF SECTION OFFICERS

Sec. 4. (*a*) Chairman.—The chairman shall preside at the meetings of the section and shall perform such duties as usually belong to such an office, or as may be provided by the by-laws of the section. He shall coöperate with the secretary in arranging the program, and shall see that proper arrangements are made for his section at the Scientific Assembly.

(*b*) Vice-Chairman.—The vice-chairman shall assist the chairman in the performance of his duties and shall preside in his absence, or at his request.

(*c*) Secretary.—The secretary shall keep a record of the proceedings of the section in a book provided for such purpose; shall, with the coöperation of the chairman, and in accordance with rules and regulations enacted by the House of Delegates, arrange the program; and shall, at least thirty days before the Scientific Assembly, forward it to the Secretary of the Associa-

tion for insertion in the official program; and shall perform such other duties pertaining to his office as may be provided by the by-laws of the Association or of the section.

EXECUTIVE COMMITTEE

Sec. 5.—Each section shall have an executive committee, which shall consist of the chairman and the last two retiring chairmen. In case of absence of a member of the executive committee of a section from a Scientific Assembly, the vacancy shall be filled by the chairman of the section. This committee shall examine and pass on all papers read before the section, and shall endorse for publication only those that are of scientific or of practical value, and which will reflect credit on the section before which they were read. It shall act as the nominating committee of the section.

MEETINGS

Sec. 6.—Sections shall hold meetings at 9 a. m. and 2 p. m. daily in accordance with the program for the Scientific Assembly, as arranged by the Council on Scientific Assembly.

WHO MAY TAKE PART IN SECTION WORK

Sec. 7.—Fellows and Associate Fellows only shall have the right to participate in the business deliberations of a section. Fellows, Affiliate, Associate, and Honorary Fellows, and Invited Guests may present papers and take part in the scientific discussions.

ASSOCIATE FELLOWS

Sec. 8.—The officers of a section may nominate for Associate Fellowship representative teachers and students of sciences allied to medicine, resident in the United States, not eligible to regular membership. The secretary shall immediately notify the Secretary of the Association of such nominations.

HONORARY FELLOWS

Sec. 9.—Eech section at each Scientific Assembly may nominate for Honorary Fellowship in the American Medical Association a physician of a foreign country who has risen to preëminence in the profession of medicine; provided, however, that nominations for Honorary Fellowship in the American Medical Association shall be acted on by the sections on or before the second day of each Scientific Assembly. The secretary of the section shall immediately notify the Secretary of the Association of such nomination.

TIME AT WHICH TITLES MUST BE IN

Sec. 10.—Titles of papers to be presented to the section must be in the hands of the secretary of the section at least thirty-five days before the first day of the Scientific Assembly. With the title, the writer shall submit an abstract of the paper not less than thirty or more than one hundred and fifty words in length and an estimate of the time required to read his paper.

LENGTH OF PAPERS AND DISCUSSIONS

Sec. 11.—The time allowed for the presentation of a paper before a section shall be limited to fifteen minutes. No one shall discuss any paper more than once, nor for longer than five minutes except with the unanimous consent of those present.

NUMBER OF PAPERS ON PROGRAM

Sec. 12.—The number of papers, including addresses, on the program of any section shall not exceed twenty-five.

CAN PRESENT ONLY ONE PAPER AT AN ANNUAL SESSION

Sec. 13.—A Fellow shall present no more than one paper at any Scientific Assembly.

SECTION TO PROVIDE BY-LAWS

Sec. 14.—Each section may make by-laws for its own government, provided that they shall in no way conflict with the Constitution and By-Laws of the American Medical Association.

CHAPTER XV.—Publication

PAPERS APPROVED FOR PUBLICATION

Section 1.—No paper shall be published as having been read before a section unless it has received the approval and the endorsement of each member of the executive committee of the section before which it was read.

PAPERS MUST BE READY FOR PUBLICATION

Sec. 2.—Each author shall hand his paper to the secretary of the section immediately after it is read. The secretary shall endorse thereon that it has been read and shall hand it to the chairman of the executive committee. All papers approved by the executive committee shall be returned to the secretary of the section, who shall at once forward them to the editor of *The Journal.*

PAPERS "READ BY TITLE"

Sec. 3.—No paper shall be published as having been read before a section unless it has actually been read by its author, or unless, for special reasons, when the author has been present and prepared to read the paper, the section shall unanimously vote to have it read by title.

PAPERS THE PROPERTY OF THE ASSOCIATION

Sec. 4.—All papers and reports presented to a section and approved by the executive committee shall become the exclusive property of the Association, provided that the Board of Trustees may permit an author to publish his paper elsewhere than in *The Journal of the American Medical Association.*

MISCELLANEOUS

CHAPTER XVI.—Official Resolutions Approved by the House of Delegates

No memorial, resolution or opinion of any character whatever shall be issued in the name of the American Medical Association unless it has been approved by the House of Delegates.

CHAPTER XVII.—Annual Fellowship Dues

The annual Fellowship dues and the subscription price of *The Journal of the American Medical Association* shall be fixed by the Board of Trustees, and the same shall be payable in advance, on the first day of January of each year, provided that the annual dues shall not exceed $6, and provided that the amount of the same shall be announced in *The Journal of the American Medical Association* not later than November 1st of each year.

CHAPTER XVIII.—Articles of Incorporation

The House of Delegates, at any annual session, wherever the same may be held, may instruct the Board of Trustees to make any changes in the articles of incorporation in accordance with the law which may appear desirable, or which may be made necessary by any change or amendment to the Constitution and By-Laws of this Association.

CHAPTER XIX.—Amendment to These By-Laws

These By-Laws may be amended on a three-fourths vote of the House of Delegates, provided that no amendment shall be acted on till the day following that on which it is introduced; except that the Board of Trustees may, by unanimous vote, make such changes, and such changes only, as may be required to adapt them to the rules and regulations of the United States postal authorities.

STANDING RULES

OF THE

HOUSE OF DELEGATES

OF THE

AMERICAN MEDICAL ASSOCIATION

PAPERS FOR PUBLICATION

Adopted at Boston, June 8, 1865.

"Resolved, That the several sections of this Association be requested, in the future, to refer no papers or reports to the Committee of Publication [the Board of Trustees], except such as can be fairly classed under one of the three following heads, viz.: 1. Such as may contain and establish positively new facts, modes of practice or principles of real value. 2. Such as may contain the results of well devised original experimental researches. 3. Such as present so complete a review of the facts on any particular subject as to enable the writer to deduce therefrom legitimate conclusions of importance."

SOLICITATIONS OF VOTES

Adopted by the House of Delegates at Saratoga Springs, N. Y., June 13, 1902.

"Resolved, That it is the sense of the House of Delegates of the American Medical Association that the solicitation of votes for office is not in keeping with the dignity of the medical profession, nor in harmony with the spirit of this Association, and that such solicitation shall be considered a disqualification for election to any office in the gift of the Association."

REPORTS, RESOLUTIONS, ETC.

Adopted by the House of Delegates at Boston, June 7, 1906

"Resolved, That in future all reports, resolutions, amendments to the Constitution and By-Laws, etc., be furnished in duplicate, one copy to be furnished the Secretary for the official minutes and the other to committeemen; and that the Secretary be instructed to engage a typewritist for the use of committeemen in making their reports."

PENSIONS OR ANNUITIES

Adopted by the House of Delegates at Atlantic City, N. J.,
June 9, 1909.

"Resolved, That no proposition or resolution advocating the payment of a pension or annuity to any member or former member of the Association be established by the House of Delegates without the previous consent and endorsement of the delegation of the state association of which the proposed beneficiary is or was a member."

REGARDING THE EFFECT ON MEMBERSHIP OF REMOVAL TO ANOTHER STATE

Adopted by the House of Delegates at Minneapolis, Minn., June 18, 1913.

"Resolved, That nothing in Section 3, Chapter VIII of the By-Laws (Effect on Membership of Removal to Another State) shall be construed as exempting any member of the American Medical Association from compliance with the requirements of the civil laws of the state or district into which he may have removed."

THE COUNCILS AND THE HOUSE OF DELEGATES

Adopted by the House of Delegates at Atlantic City, N. J., June 4, 1912.

The House of Delegates extends the courtesy of the floor to the members of the various councils of the Association, and especially requests the secretaries of these councils to attend the sessions of the House, according them the privilege of the floor, in order that the House may be constantly in position to obtain information concerning work that is being done by these councils, that this body may direct these activities.

RULES FOR THE GUIDANCE OF THE COMMITTEE ON CREDENTIALS

Adopted by the House of Delegates at Atlantic City, N. J., June 6, 1912.

1. Credentials shall be of two parts. The first part shall be sent to the office of the Secretary of the American Medical Association by the secretary of the constituent association, not later than seven days prior to the first day of the first meeting of the House of Delegates, and shall be a list of delegates and alternates for that association. The constituent associations shall designate an alternate for each delegate, who may take the pledge of the delegate when authorized to do so by said delegate in writing. In the absence of such authority, any alternate who has been duly chosen by the constituent association may be seated in place of any delegate who is unable to attend, provided he presents proper official authority from said association. A certificate signed by the president or secretary of the constituent association shall be deemed legal authority *(as amended June 7, 1921)*.

2. Each delegate shall be furnished with a credential by the secretary of the association by which he is elected on a prescribed form furnished by the Secretary of the American Medical Association, which shall give the date and term for which he was elected and who was elected to act as alternate for him in case of his inability.

3. A delegate, on presenting himself to the Committee on Credentials, may be seated even though he may not present part 2 of his credential, provided he is properly identified as the delegate who was elected by his association and whose name appears on the Secretary's record.

4. No alternate may be seated unless his credentials meet the same requirements as designated for the delegate and he can show written evidence that he is empowered by his delegate to act for him, except as provided for in Section 1 as amended *(as amended June 7, 1921)*.

PROCEDURE IN PREFERRING CHARGES

Adopted by the House of Delegates at San Francisco, Cal., June 22, 1915.

The Secretary of the American Medical Association shall file charges with the Judicial Council against Fellows of the Association when overt acts on the part of such Fellows, supported by reasonable evidence, are brought to the attention of the Secretary of the American Medical Association.

RULES FOR THE GUIDANCE OF THE COUNCIL ON SCIENTIFIC ASSEMBLY

Adopted by the House of Delegates at New York, June 7, 1917.
Revised at Atlantic City, June 10, 1919.

1. The term "unit" shall signify a single meeting of a section at an annual session.

2. The sections of the Scientific Assembly shall be limited at each annual session to the maximum number of three units.

3. The sections shall not hold more than one meeting on each of the days of the annual session during which section meetings are held.

4. The Council on Scientific Assembly shall apportion the morning and afternoon units at each annual session to the several sections.

SOME NEWER VIEWPOINTS CONCERNING THE NATURE AND TREATMENT OF NEPHRITIS

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The usual viewpoint concerning nephritis is that certain lesions, of an inflammatory or degenerative nature, occur in various portions of the kidney and that, as a result, renal function is impaired, and water, salts and various organic substances are retained in the body and give rise to the symptoms of uremia, to edema, increased blood pressure and various changes in the heart, lungs and eyes. Patients present a certain group of symptoms, and at autopsy the kidneys are found to be regularly involved—hence it is assumed that the renal lesions are the cause of the symptoms. This common view of the nature of nephritis may well be questioned, as in many instances it fails to provide a full explanation of the condition.

A more reasonable viewpoint, in the light of our present knowledge, is that the various forms of nephritis are essentially general diseases which affect other parts of the body as well as the kidneys, the changes throughout the body being the result of the same injurious agents that have affected the kidneys, the greater intensity of the lesions in the kidneys being due to greater concentration of toxic agents at the point of excretion from the body.

Nephritis is not a single disease. There are several forms of nephritis which differ so greatly in etiology, pathology and symptomatology as to constitute essentially different diseases. Combination forms occur, it is true, and there may be a gradual transition in type. During early life the various forms of nephritis occur as clear cut conditions and can, therefore, be studied to greater advantage in children than in adults.

The two common forms of nephritis occurring during early life are the parenchymatous, or tubular nephritis, or, as it is sometimes called, "nephrosis" and the hemorrhagic, or glomerular nephritis. Both of these forms of nephritis, as they occur in children, are usually the result of infections occurring in the body elsewhere than in the kidneys. The infections in question are of a more or less specific nature and lead to general cellular damage or to widespread capillary involvement.

PARENCHYMATOUS NEPHRITIS, OR "NEPHROSIS"

We will first consider parenchymatous nephritis. In this condition the onset of symptoms is usually insidious. There is a gradual increase in the edema, which may ultimately become extreme. The urine decreases in amount and although it may be dark colored, it

is never "smoky." Large amounts of albumin are present. There are numerous granular casts. The chlorides of the urine are greatly diminished, and may be entirely absent. The phenolsulphonphthalein excretion is practically normal. Systolic blood pressure is not elevated. Acidosis does not occur. The eye grounds are normal. Examination of the peripheral capillaries of the skin by the method to be described later reveals no abnormalities. There is a secondary anemia. The protein of the blood serum is greatly diminished. Lipemia may be present. There is no retention of non-protein nitrogen. The chlorides of the plasma are low.

True uremia does not occur.

The nutrition of these patients invariably suffers, though the true state of nutrition may be masked by the edema. Patients with parenchymatous nephritis have very little resistance to infections of any sort, and death, when it occurs, is usually the result of intercurrent infections.

Not all patients with parenchymatous nephritis succumb. Many recover completely. The edema disappears and the urine becomes entirely normal and there are no remaining signs of any sort to indicate that permanent kidney damage has occurred.

The kidneys in this form of nephritis are large and white without petechial hemorrhages. Microscopically there is seen an extensive degeneration of the cells of the renal tubules and the lumens of the tubules are filled with degenerated material and wandering leucocytes. There are no bacteria present.

Tubular nephritis occurs in toxemias due to a variety of causes, but as seen in children it is more likely to be the result of infections with the staphylococcus than from any other cause. In practically all of the cases of severe parenchymatous nephritis which we have observed there has been a staphylococcus infection of the nasal accessory sinuses, especially of the maxillary sinuses. We have regularly observed that increased activity of the infections was accompanied by an exacerbation of all of the symptoms of nephritis and further that successful treatment of the nasal sinus infections was regularly followed by rapid improvement and complete disappearance of all of the symptoms of nephritis. Forms of treatment other than those directed toward the infection were of but temporary benefit. The causal relationship between infection and nephritis in these cases seems definite.

The next question that arises is the manner in which the infection brings about the changes occurring in the body. There is no evidence that septicemia occurs as blood cultures from patients in our series have been invariably negative. It appears rather that toxic substances are absorbed from the focus. Inasmuch as organisms isolated from the sinuses and grown in pure culture do not produce the toxic material, which there is reason to believe is the active agent, we are forced to conclude that the substance in question is produced through the action of bacterial toxins on the body cells.

Whatever the exact nature of the poison produced as the result of the staphylococcus infection of the nasal accessory sinuses, or elsewhere, the effect cannot be explained purely on the basis of destruction of the cells of the renal tubules. There are many features of the condition that cannot be explained on the basis of insufficiency of renal function. Even complete removal of both kidneys does not result in the symptoms observed. Edema does not follow nephrectomy unless certain poisons, such as uranium, are administered. Furthermore, extensive degeneration of the renal tubules such as may be brought about by various poisons, is not associated with edema or the other characteristic symptoms of parenchymatous nephritis.

In parenchymatous nephritis the ordinary tests for renal function fail to demonstrate a lack of efficiency on the part of the kidney. On the other hand, there is definite evidence that the tissues of the body behave in an abnormal manner. Sodium chloride is taken up by the tissues and retained to such an extent that the blood chloride falls to lower than normal limits. If a tourniquet is placed around an extremity so as to produce stasis, fluid passes from the blood into the tissues, whereas in normal individuals the passage of fluid is in the opposite direction. Furthermore, salt solution, injected subcutaneously, is not absorbed into the blood as rapidly as in normal individuals, but is more quickly taken up by the surrounding tissues. Support of the idea that the changes are primarily in the body tissues is given by the fact that we have observed the occurrence of edema before any changes were observed in the urine. Volhard has shown that if in cases of edema, elimination of the edematous fluid occurs, sodium chloride and water move first from the tissues to the blood and lead to a temporary dilution. Renal excretion then follows.

In order to explain the edema it is necessary to assume some other factor than the retention of water and salts by the kidney. One explanation is that the colloidal osmotic pressure of the blood is lowered, due to the low blood protein. It has been demonstrated that such changes in the colloidal osmotic pressure do lead to edema in experimental animals. It is furthermore true that the proteins lost by way of the urine are those which are more especially concerned in the maintenance of normal colloidal osmotic pressure in the serum. In general, edema usually tends to disappear as the blood protein approaches normal, and becomes more marked when the blood protein is low. However, as already mentioned, edema may be present even before protein has been lost by way of the urine.

There is one important and constant finding in all cases of parenchymatous nephritis with edema, and that is the observation of Clausen that the surface tension of the serum is lowered.

The surface tension of the serum is surprisingly constant in normal individuals. It is very slightly lowered in the serum from some cases of jaundice and from some cases of eczema, but not to the same degree as in parenchymatous nephritis.

The determination of the surface tension is easily made by weighing three drops of the serum according to the method of Harkins.

A full discussion of the surface tension phenomena in nephritis appears in recent articles by Clausen. [1] [2] [3]

Clausen has found that there is a substance present in the blood of these patients which is responsible for the lowering of the surface tension. This substance is also excreted in large amounts in the urine. The substance is not present in the blood or urine of normal individuals nor of patients with edema due to cardiac disease or to other forms of nephritis. The surface active substance disappears from the blood simultaneously with the clearing up of the foci of infection and the disappearance of the edema. The substance in question seems to be definitely associated with the presence of infections, and to be the important factor in the production of edema. The substance in question is neither lecithin nor cholesterin, nor is it one of the usual proteins. It seems to be, however, a protein derivative.

Clausen[4] isolated a considerable amount of the surface active substance from the urines of our patients and studied its chemical and physical properties. Most interesting is the fact that the substance increases the permeability of membranes either natural or artificial, e. g., a collodion sac treated with a solution of the surface active substance becomes readily permeable to proteins It is likely that the permeability of the kidney to the proteins of the blood is the direct result of the action of this subsance. Changes in the permeability of various cell membranes of the body necessarily lead to a redistribution of proteins and salts and such changes in permeability may well be the cause of the edema observed.

The first step in the successful treatment of parenchymatous nephritis is to locate and treat the infection responsible. In the case of children, the infection is likely to be in the nasal accessory sinuses. In making the diagnosis of sinus infection, direct inspection of the nasal mucous membranes by both anterior and posterior rhinoscopy is necessary. The x-ray is also of assistance in diagnosis. For more detailed discussion of diagnosis of sinus disease in childhood the reader is referred to articles by Dean [5] [6] and by Arbuckle.[7] In treating sinus infections it is usually necessary, first, to remove enlarged and infected tonsils and adenoids so as to allow for adequate drainage and prevent reinfection, and this may be all that is necessary in some instances. It is often, however, necessary to irrigate the maxillary sinuses and at times more radical operations on other sinuses should be performed, but it is well to bear in mind that these patients have a lowered resistance to infection, and consequently radical surgical procedures should be resorted to only when absolutely necessary. Local treatment with such agents as dilute mercurochrome solutions are of value in preventing reinfection.

When the infection can be located and cleared up recovery from the nephritis may be anticipated, irrespective of other methods of treatment.

Regulation of the diet is important, particularly on account of the poor state of nutrition and the fact that large amounts of protein

have been lost from the blood by way of the urine. A *high* protein diet is indicated. A young patient should receive from 2-4 grams of protein per kilo of body weight per day (1/30 to 1/15 oz. per pound). A high protein feeding does not aggravate the symptoms—and indeed often leads to a disappearance of the anemia. The best forms of protein are milk, eggs and meat; vegetable protein, being incomplete, is of less value. Green vegetables, however, should be given daily on account of the tendency to anemia. Additional iron may also be given to advantage. Cod liver oil is of value in increasing the resistance to infection.

Salt and water need not be limited except when the edema is of an extreme degree. It is true that limitation of salt and water does tend to decrease the edema, but the benefits are entirely symptomatic.

Purgation and sweating accomplish no good purpose and produce considerable discomfort. Blood transfusions are of great value in restoring serum protein and in overcoming anemia. The intravenous injections of hypertonic glucose solutions or of acacia lead to but temporary diminution in edema. The general condition is unaffected.

Diuretics of the purin series (e. g., diuretin) occasionally produced marked beneficial effect. It is interesting to note that this diuretic increases the surface tension of the blood and in that way has an action directly opposed to that of the peculiar surface-active substance present in the blood of these patients. In the presence of active infections the effect of the purin diuretics is very slight, but no harm seems to be caused by their use.

After the clearing up of the infections and the disappearance of the symptoms of nephritis, all measures which tend to increase the patient's resistance to infection and improve his nutrition are indicated. Heliotherapy and out-door life may be mentioned as especially valuable measures.

HEMORRHAGIC, OR GLOMERULAR NEPHRITIS

Let us now pass to the consideration of another form of nephritis, and one differing so greatly from the preceding form as to constitute an essentially different disease.

The symptoms of glomerular nephritis begin abruptly. The patient appears acutely ill, and listless. The condition is likely to be preceded by a febrile disturbance and often by an acute sore throat. Definite uremic symptoms may appear at the onset. The urine is likely to be diminished or even entirely suppressed for a short period. In certain cases, on the other hand, there may be a copious diuresis. After the first few days the urine volume is likely to be within normal limits. The most striking characteristic of the urine is its "smoky" appearance. This is due to the presence of blood. Later the urine may be apparently clear, but blood cells are found microscopically. The presence of blood is the characteristic urinary finding in this form of nephritis. Albumin is present in but moderate amounts. Microscopically there are a few granular or blood casts

and later hyalin casts. There is a secondary anemia, but the serum protein is not reduced. There is definite nitrogen retention, which may be extreme (200 mg. or over per 100 c.c. of blood). The blood chlorides are moderately increased in amount. *The surface tension of the blood is normal.* There is a diminished excretion of phenolsulphonphthalein, the blood pressure is invariably elevated at some stage of the disease and may be very high. Acidosis accompanied by air hunger is seen in the more severe cases.

Edema is rarely marked. There may be some puffiness of the eyelids, but the extreme degree of edema seen in the cases of parenchymatous nephritis is not observed. In the majority of cases the symptoms subside within a relatively short period. In a certain number of instances, however, the symptoms continue, and the patient ultimately dies with the symptoms of uremia and cardiac failure.

Uremic symptoms, occurring at the onset of the condition, are of less grave significance than similar symptoms occurring later on.

The kidneys in this condition are large and red in the case of patients succumbing in the early stages of the disease. In the later stages the kidneys are large and white with petechial hemorrhages. In cases of very long duration the kidneys become definitely contracted. Microscopically the renal glomeruli are congested in the early stages, and later there are extensive changes in the glomeruli which may lead to practical obliteration. In protracted cases there is some small round cell infiltration and fibrous tissue formation.

Glomerular nephritis, like parenchymatous nephritis, appears to be the result of infection. In glomerular nephritis, however, the organism is almost invariably a hemolytic streptococcus. The most frequent foci of infection, in our series of cases, have been the tonsils, middle ear and mastoid, and only occasionally the nasal accessory sinuses. Streptococcus infections elsewhere may produce the same condition. Apparently the damage to the kidney is not the result of septicemia with lodgment of the organisms in the glomeruli. Although in another form of glomerular nephritis (that occurring in the course of subacute bacterial endocarditis) there are actual emboli in the glomeruli.

The changes in the glomeruli appear to be the result of the action of the streptococcus toxins.

Other portions of the body, as well as the renal glomeruli, are affected. The damage is greater in the kidney, possibly on account of the concentration of toxins at the point of excretion, but the capillaries throughout the body are also affected.

The evidence of change in the capillaries of the body may be best observed in the surface capillaries at the base of the finger nails. These capillaries can be readily observed by first moistening the skin with glycerin or cedar oil and then examining the field under the low power of the microscope in a beam of direct light. Even in the very early stages of hemorrhagic nephritis and at times before the occurrence of albuminuria or hematuria, the characteristic changes in the skin capillaries may be observed. There is an increased tortu-

osity of the vessels, a spastic contraction of the arterial limbs and a distention of the venous limbs. Following an attack of hemorrhagic nephritis the capillaries often become normal again, but in prolonged cases the capillary alterations remain and permanent changes are likely to result. When the surface capillaries are severely damaged petechial hemorrhages may be observed.

In certain cases of streptococcus infection the involvement of the systemic capillaries may be greater than that of the renal glomeruli, the changes in the peripheral capillaries being out of proportion to the urinary findings.

It is our impression that during early life and especially during infancy the capillaries of the gastro-intestinal tract are much more likely to be damaged by infection than are the renal capillaries, if one can judge from clinical and postmortem evidence. As is well known, involvement of the skin capillaries occurs in scarlet fever before or in the absence of renal involvement.

Thus we have seen, in the case of a young infant suffering from a low grade streptococcus infection of the mastoid, slight hematuria and albuminuria, moderate hypertension and marked and continuous gastrointestinal symptoms. The gastrointestinal symptoms were vomiting and a profuse watery diarrhea, continuing despite suitable feeding. There was a condition of hydrolability, i. e. failure to retain water, even when large amounts were given parenterally. There was no non-protein-nitrogen retention. The symptoms persisted for six weeks, but completely disappeared after drainage of an infected mastoid antrum. It is to be expected that an agent toxic to the capillaries would exert its greatest effect at those places where the capillary activity is greatest. In the infant the functional activity of the capillaries of the gastrointestinal tract is relatively greater than in the adult, and it is possible that this explains the greater involvement of the gastrointestinal capillaries which seems to occur.

It is probable that damage to the renal glomeruli, which, if at all severe, leads to irreparable changes. Recovery, or regeneration, does not seem to occur as in the case of simple degeneration of tubule cells. Certain glomeruli, or portions of the capillary loops in the glomeruli, may be completely destroyed, yet a sufficient number of functionally active capillaries may remain to carry on efficiently the work demanded. If, however, the infection which gives rise to the capillary involvement does not clear up, but remains, and there is thus continued and repeated capillary damage, the permanent or irreparable changes produced may be sufficient to lead to a diminution of renal function to a degree incompatable with life.

The symptoms of glomerular nephritis are to be explained on the basis of general capillary damage as well as the special capillary damage resulting in renal insufficiency.

The hypertension seems to have its most logical explanation in the general capillary constriction, which is certainly present in all severe cases. When we consider that there are, according to Krogh, as many as 700 capillaries in a square section of muscle as large as

the head of a pin (0.5 sq. mm.) and as many as 20 capillaries in the same area of the skin, it is readily understood how any considerable general constriction could well lead to hypertension. On the other hand, we know that nephrectomy alone does not lead to hypertension.

The edema is doubtless due to a number of causes. A simple explanation would be that it is due to retention of sodium chloride, resulting from impaired renal function, but such explanation is not altogether satisfactory. Edema does not occur following nephrectomy unless capillary poisons are administered. Furthermore, administration of hypertonic saline does not always lead to edema. Further, it has been shown by Volhard that there are definite variations in the exchange of salts and fluids between the blood and the tissues in the presence of hemorrhagic nephritis and that these changes are of a different nature than those observed in normal individuals and in nephrectomized animals. Capillary damage leading to changes in permeability seems to be a more important factor in the production of edema than the mere retention of small amounts of sodium chloride. An excellent discussion of this aspect of the problem is contained in a monograph by Leo Loeb.[9]

It has been suggested by Martin H. Fischer[10] and others that the edema is the result of acid accumulation in the tissues, which leads to swelling of the cellular colloids. The chief objection to this theory, as pointed out by Loeb, is that there are no significant alterations in the hydrogen ion concentration of the tissues, and further that if there were a considerable increase in the hydrogen ion concentration the result would be a diminished capacity of the colloids to hold water. Furthermore, the seat of the edema is not primarily in the parenchyma of the organs but in the interstitial tissue. Additional evidence against the assumption of Fischer is that the administration of alkali is especially likely to increase the edema of patients suffering from glomerular nephritis and that the administration of calcium chloride or ammonium chloride substances that lead to an increase in the acid present in the blood, results in a decrease in the edema. In chronic cases of glomerular nephritis with hypertension, cardiac failure is likely to occur ultimately, and as the result of such cardiac failure edema occurs, as in any other form of cardiac insufficiency.

Mention has been made of the fact that some degree of acidosis is observed in severe cases of glomerular nephritis. This acidosis is in part explained by failure of the kidney to excrete acid phosphate. There is also the factor of capillary damage. Evidence has been brought forward by Wallace and Pellini[11] that the acidosis of experimental uranium nephritis is the result of capillary injury, inasmuch as it may be brought about in nephrectomized animals by the administration of uranium, which is known to be a capillary poison.

It is not possible to discuss fully the subject of uremia at this time. Suffice it to say that the symptoms of uremia cannot be explained on the basis of renal insufficiency alone. True uremia does not occur in nephrectomized individuals nor in those in whom, as

the result of mechanical blocking of the urine, there is a retention of non-protein-nitrogen to 200 mg. or over. This has been repeatedly observed by various investigators and corresponds with our own experience. Hypertension may well be a factor in producing the symptoms of uremia, as such symptoms are rarely observed except in the presence of hypertension. Foster has brought forward excellent evidence that a base extractable from the blood of uremic patients is responsible for the symptoms. It seems likely that this substance is not a normal constituent of the body as it is not present in the blood of nephrectomized individuals. It would seem probable that the substance in question is the result of some infectious process, perhaps the same process that is responsible for the development of the general capillary changes.

The first essential in the treatment of glomerular nephritis, as in parenchymatous nephritis, is the removal of possible foci of infection. In the case of such acute infections as mastoiditis, operation is often followed by a prompt disappearance of symptoms. It is interesting to note in this connection that in infants chronic infection of the mastoid antrum without the usual local signs is of frequent occurrence. A common focus of infection in older individuals is at the roots of the teeth.

Operation on acutely infected tonsils and adenoids is to be avoided as an exacerbation of the symptoms, and occasionally septicemia, occur as a result.

The infection responsible for a continuance of the symptoms of glomerular nephritis may be, and often is, of a low grade. There may be no fever and little if any leucocytic reaction. In chronic cases of glomerular nephritis where permanent damage has been done, the effects of operative treatment of possible foci are, of course, unsatisfactory.

The general care of the patient is of great importance. Further damage to the capillaries should be avoided and no undue strain put upon them. Excessive muscular exercise, by increasing the circulation, has a distinctly bad effect. Patients in the acute stage, and for some time afterwards, should remain at rest in bed. Chilling of the body surface results in peripheral vascular constriction, and this, of necessity, leads to some engorgement of the visceral capillaries. Furthermore, chilling favors the development of fresh infections in the nose and throat.

The dietetic treatment is also of great importance. There is definitely impaired renal function with retention of nitrogenous end products, hence a low protein diet is essential. The minimum protein requirements of the body, however, must be covered. The patient, if a young child, should receive approximately 1 gm. of protein per kilo of body weight per day (1/60 oz. per lb.). Older children or adults should receive somewhat less. This protein is best supplied in the form of milk, because of the fact that milk protein is a complete one and can therefore be utilized with a minimum waste and leads to the lowest possible nitrogen excretion, and, further, because

milk contains no extractives which might conceivably augment capillary damage. It is a matter of common observation that the addition of other proteins, especially vegetable protein, to the diet of patients with hemorrhagic nephritis is often followed by an increase in the hematuria.

Calories, in addition to those furnished by milk, are necessary. Indeed, much harm has been done to nephritics by underfeeding. The nutrition must be maintained. The additional calories are supplied by means of fat (cream, ice cream) and carbohydrate (fruit juices and sugar). Cereals containing much protein are inadvisable, but some starches (especially arrowroot starch) which are low in protein, may be given in considerable amounts.

As soon as possible the diet should be increased to meet the patient's full protein requirement, but this should not be done as long as there is hematuria, or a high or rising blood non-protein-nitrogen. The most suitable forms of protein which may be added to the diet are curds and eggs. One to three eggs a day may be used in any form. Some time after the disappearance of hematuria, meat once a day, may be added. There is no good evidence that one form of meat is more deleterious than another. Meat extractives, however, such as soup, broths and meat extracts, ore of no value and may be harmful. Of the vegetables, spinach is of special value because of its iron and pigment content.

The reappearance of hematuria is an indication for reduction of the diet. It is well, in all cases of severe hemorrhagic nephritis, to put the patient on a "sugar diet" for periods of from 1 to 3 days at intervals. The urine can often be rendered blood free in this way. On a "sugar day" the patient receives 10 gm. per kilo (1/6 oz. per lb.) of cane sugar in 1000 c. c. or 1500 c. c. (2 to 3 pints) of fruit juice, and nothing else.

The amount of salt in the diet should be low, but salt need not be entirely eliminated except when marked edema is present.

It is inadvisable to restrict the water intake of patients with hemorrhagic nephritis, even in the presence of edema. It has been our observation that the administration of considerable amounts of water to edematous patients suffering from hemorrhagic nephritis may result in an increase in the elimination of water greater than the extra amount given.

In hemorrhagic nephritis diuretics are distinctly contraindicated. This is especially true of the diuretics of the purin series. We have observed an increase in hematuria and of nitrogen retention in patients so treated.

The administration of alkalies has been recommended as a method of treatment. It is true that acidosis sometimes occurs during the course of glomerular nephritis, but it is also true that the administration of alkali is likely to lead to the development of alkalosis and often tetany with associated convulsions.

The acidosis of glomerular nephritis is in part explained by failure of the kidney to excrete acid and it is known that acid phos-

phate is retained in the blood. The kidney also has a diminished capacity for the excretion of alkali. There is no evidence that alkali benefits the kidney. Indeed, exacerbation of all the symptoms may result from alkali administration.

A more logical method of treatment is the administration of calcium lactate by mouth. This leads to an increased excretion of phosphate by the bowel and this lowers the phosphate content of the blood. Symptomatic improvement has been observed following this form of treatment.

It has been shown that sweating fails to lead to the elimination of any harmful substance. It is weakening to the patient and is, in general, contraindicated. The only possible good effect is the peripheral capillary dilatation.

The intravenous administration of hypertonic glucose solutions leads to a movement of fluid and retained solids from the subcutaneous tissues into the blood and out by way of the kidneys. The glucose also has a protein sparing action. This is a valuable method of treatment.

In early acute uremia, bleeding, followed by a transfusion, or injection of glucose solution, is of distinct value.

The two types of nephritis discussed have been considered as separate and distinct diseases. This conception is not based on the pathological findings in the kidneys. Indeed, as we have seen, the changes occurring in the kidneys are to be considered merely as part of the general body injury, and not the essential cause of the symptoms observed.

In all cases of glomerular nephritis there is some tubular involvement. This may be due to the action of the same toxic agent, or to circulatory changes in the tubules occurring as the result of the glomerular involvement. Complete destruction of a glomerulus leads to atrophy of the corresponding tubule. On the other hand, extensive involvement of the tubules may well lead to some involvement of the associated glomeruli. In any event, the changes in the kidney *per se* are not the important differentiating factor. In the classification adopted of glomerular and tubular nephritis, it is to be understood that both conditions are general ones with most marked changes in either the vascular or cellular systems. Indeed, it would be well if some other nomenclature could be adopted which would emphasize the general nature of the conditions. The types of nephritis we have considered are not essentially diseases of the kidney any more than syphilis and measles are diseases of the skin.

There may be a transition from one type of nephritis to the other, aside from the changes observed in the kidneys. A patient with parenchymatous nephritis is very susceptible to infection and secondary streptococcus infections are not infrequent. In such instances a combination of the two conditions may be present. It is impossible to state, in the light of our present knowledge, whether or not a purely parenchymatous nephritis may undergo a transition to a glomerular nephritis in the absence of the secondary infections.

A summary of the essential differences in the two forms of nephritis is given in a chart prepared by Clausen.

	Tubular or parenchymatous nephritis (nephrosis)	Glomerular or hemorrhagic nephritis
Etiology—Infection	Staphylococcus, especially nasal sinuses.	Streptococcus, espec. tonsils and mastoid.
Pathology, Microscopic	General parenchymatous tissue injury. Degenertion of renal tubule cells. No deposits of fibrin.	General capillary injury. Glomerular lesions in kidney. Fibrin deposits.
Edema	+ + + +	Slight or absent.
Urine	Volume much decreased. Albumin + + + + Blood occasionally.	Volume normal or moderate decrease. Albumin +, Blood + + + +.
BLOOD:		
N. P. N.	Normal.	Increased.
Chlorides	Normal or low.	Increased.
Serum protein	Low.	Normal.
Lipemia	Present.	Absent.
Surface tension	Low.	Normal or high.
Pressure	Normal.	Increased.
Blood P. S. P. test	Normal.	Low.
Uremia	Does not occur.	May occur.
Response to high protein diet	Good.	Symptoms aggravated.
Response to purin diuretics	May be good.	Symptoms aggravated.
Prognosis	Good, if infection can be removed. No permanent damage.	Good in most acute cases. Permanent damage in chronic cases.
Mode of death	Intercurrent infections.	Uremia.

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*Crawford, W. J.	Goldsboro
Crewes, N. H.	Greensboro
Cromartie, R. S.	Garland
Crouch, A. McR.	Wilmington
Crouch, T. D.	Stony Point
*Crowell, A. J. (Hon.)	Charlotte
*Crowell, G. B.	Lincolnton
*Crowell, L. A.	Lincolnton
Crowell, W. H.	Whiteville
Crumpler, Paul	Clinton
Cummings, M. P.	Reidsville
Curtis, W. C.	Winston-Salem
Cutchin, J. Henry	Whitakers
*Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.),	Win.-Salem
Dameron, Ernest L.	Star
*Daniel, N. C.	Oxford
*Daniels, O. C.	Oriental
*Daniels, R. L.	New Bern
Darden, O. B.	Richmond, Va. (Durham-Orange Co.)
Daughtridge, A. L.	Rocky Mount
Daugherty, J. E.	Brooklyn, N. Y. (Forsyth Co.)
Davidson, Jno. E. S.	Charlotte
Davis, F. M.	Canton
Davis, George	Beaufort
Davis, Jas. W.	Statesville
*Davis, J. F.	High Falls
Davis, J. J	Atlantic
Davis, J. M.	Winston-Salem
Davis, Ralph H.	Wilmington
*Davis, Thomas W.	Winston-Salem
Davis, W. C.	Summerfield
*Dawson, Walter W.	Grifton
Dawson, W. E.	Hookerton
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte
Dees, D. A.	Bayboro
*Dees, R. E.	Greensboro
DeLaney, Chas. O.	Gastonia
Denchfield, A. L.	Asheville
Denson, H. A.	Bennett
Denton, A. L.	Castalia
*Dewar, Wm. B.	Raleigh
Dick, Julius V.	Gibsonville
*Dickie, J. W.	Southern Pines
Dickinson, E. T.	Greenville
Dillard, Richard, Jr. (Hon.),	Edenton
*Dixon, G. G.	Ayden
*Dixon, Guy E.	Hendersonville
Dixon, Hubert C.	Madison
Dixon, Joseph	Greenville
*Dixon, W. H.	Rocky Mount
Dixon, Wm. H.	Ayden
Dodson, H. H. (Hon.)	Greensboro
*Dowdy, J. E.	Thomasville
Drafts, Andrew B.	Hendersonville
Duffy, R. N.	New Bern
Duggins, Maj. P. E.	Ft. Bragg
*Duncan, Amos. C.	Forest City
*Duncan, Julian E.,	North Wilkesboro
Dunlap, L. V.	Albemarle
*Dunn, Wm. L.	Asheville
Dyer, John	High Point
Eagle, J. C.	Spencer
Eagles, Chas. S.	Saratoga
Easley, P. S.	Statesville
Eckel, O. F.	Asheville
*Eddleman, Hall M.	Gastonia

Name	Address
Edgarton, Jas. L. (Hon.)	Hendersonville
Edwards, B. O.	Asheville
Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
Edwards, F. D.	Belwood
Edwards, G. C. (Hon.)	Hookerton
Edwards, J. D. (Hon.)	Siler City
Elias, Lewis W.	Asheville
*Ellen, C. J.	Greenville
Eller, Albert J.	Readybranch
Eller, C. R.	West Jefferson
*Ellington, A. J.	Burlington
Ellington, Jas. H.	Sandy Ridge
Elliott, A. H.	Wilmington
*Elliott, J. A.	Charlotte
*Elliott, W. F.	Lincolnton
Ellis, F. A.	Salisbury
Ellis, R. C. (Hon.)	Shelby
English, Edwin S.	Brevard
English, I. L.	Faust
Erwin, Evan A.	Laurinburg
*Evans, J. E.	Wilmington
Evans, L. B.	Windsor
*Evans, W. E.	Rowland
*Everett, A. C.	Rockingham
Faison, I. W. (Hon.)	Charlotte
Faison, W. W. (Hon.)	Goldsboro
*Faison, Yates W.	Charlotte
*Farrar, M. R.	Gastonia
Farrior, J. W.	Warsaw
*Farthing, L. E.	Wilmington
Fassett, Burton W.	Durham
*Fearing, Isaiah	Elizabeth City
Fearing, Zenas	Elizabeth City
*Fearrington, Jos. P.	Winston-Salem
*Felts, Robt. L.	Durham
Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
*Ferguson, R. T.	Charlotte
Fetner, L. M.	Charlotte
Fetzer, P. W.	Madison
*Finch, O. E.	Apex
Fitzgerald, J. H.	Raleigh
Flack, Roswell E.	Asheville
*Flagge, Philip W.	Jamestown
Fleetwood, Joe E.	Conway
Fleming, G. M.	Cleveland
*Fleming, M. I.	Rocky Mount
Fleming, W. L.	Enfield
Flippin, Samuel T.	Siloam
Flowe, R. Frank	Kannapolis
*Flowers, C. E.	Zebulon
Flowers, Clarence A.	Wendell
Flowers, G. E.	Hickory
Floyd, L. D.	Cerro Gordo
Flynt, S. S.	Rural Hall
Foard, F. T.	Hickory
Foil, M. A.	Mt. Pleasant
Fogler, P. B.	Dobson
Folsom, T. W.	Asheville
Ford, D. E.	New Bern
*Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
Foster, H. H.	Norlina
*Foster, J. F.	Sanford
Fouts, J. H.	Franklin
Fowler, M. L.	Zebulon
*Fox, M. F. (Hon.)	Guilford College
Francis, Wm. G.	Waynesville
*Frazer, H. T.	Asheville
*Freeman, J. D.	Wilmington
*Freeman, R. H.	Raleigh
Frizzelle, M. T.	Ayden
*Frye, Glenn R.	Hickory
Ferguson, Henry B.	Halifax
Furman, Wm. H.	Henderson
Futrell, L. M.	Murfreesboro
Futrell, W. E.	Lasker
Gage, L. G.	Charlotte
*Gainey, John W.	Fayetteville
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.)	Wilmington
Gambill, I. S.	Elkin
Gamble, J. F.	Lincolnton
*Gambrell, Grover C.	Lexington
Garren, R. H.	Monroe
Garrenton, Cecil	Bethel
*Garrett, F. B.	Rockingham
*Garrett, F. J.	Rockingham
*Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Garvey, R. R.	Elkin
Gary, R. H.	Murfreesboro
Gaul, Jno. Stuart	Charlotte
Gaw, L. B.	Greensboro

Name	Address
Gayle, Edw. M.	Portsmouth, Va. (Burke County)
*Geddie, K. B.	Raeford
Gentry, Geo. W.	Timberlake
Gibbon, James	Charlotte
*Gibbon, Robert L. (Hon.)	Charlotte
Gibbs, E. W.	Shelby
Gibbs, N. M.	New Bern
Gibson, John S.	Gibson
*Gibson, M. R.	Raleigh
Gill, Robt. J.	Henderson
Gillreath, F. H.	North Wilkesboro
Gilmer, Chas. S. (Hon.),	Greensboro, Rt. 6
Gilmore, W. D.	Indianapolis, Ind. (Iredell-Alexander County)
Ginn, Theo. L.	Goldsboro
Glascock, J. H.	Greensboro
*Glenn, Henry F.	Gastonia
*Glenn, Lucius N.	Gastonia
Godwin, G. C.	Biltmore
*Gold, Ben	Shelby
Gold, Chas. F.	Ellenboro
*Gold, T. B.	Lawndale
*Goley, Wm. Rankin (Hon.)	Graham
Goley, Wm. Roffin	Shallote
Goode, T. V.	Statesville
*Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
Goudelock, Jno. J.	Monroe
Gouge, A. E.	Bakersville
*Gouger, Geo. J.	Concord
*Gove, Anna M. (Hon.)	Greensboro
*Grady, Jas. C.	Kenly
*Grady, Leland V.	Wilson, Rt. 2
Grady, Wm. Earle	Tryon
*Graham, Benj. R.	Wilmington
Graham, J. A.	Kansas City (Guilford Co.)
Graham, Joseph	Durham
Graham, Wm. A. (Hon.)	Charlotte
*Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
Grayson, C. S.	High Point
*Green, Thos. M.	Wilmington
Green, Wm. W.	Tarboro
*Greene, J. C.	Greenville
*Greene, Jos. B.	Asheville
Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Grier, Chas. T.	Carthage
Griffin, J. A. (Hon.)	Clayton
Griffin, M. A.	Asheville
Griffin, Thos. A.	Wendell
*Griffin, W. R.	Asheville
Griffis, Maj. Frank C.	Ft. Bragg
*Griffith, F. W.	Asheville
Griffith, L. M.	Asheville
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
Grimes, W. L.	Winston-Salem
*Groome, J. G.	High Point
Groves, R. B.	Lowell
Griffin, F. A.	Wendell
Gwyn, H. L.	Yanceyville
Hackney, Ben H.	Lucama
Hagaman, J. B.	Todd
*Halford, Jos. W.	Lillington
Hall, James S.	Wilmington
*Hall, J. Clegg	Albemarle
Hall, P. B.	Pembrooke
Halsey, Benj. F. (Hon.)	Roper
Hambrick, F. T.	Maiden
Hambrick, Robt. T.	Hickory
Hammond, A. F.	Pollockville
Hammock, J. C.	Walkertown
Hambrick, J. Y., Jr.	Boiling Springs
Hambrick, T. G.	Shelby
*Hand, Edgar H.	Pineville
*Hanes, F. M.	Winston-Salem
Hanes, J. L.	Pine Hall
*Harbison, J. W.	Shelby
Hardee, Parrott R.	Stem
Hardee, W. P.	Durham
*Harden, Graham	Burlington
Harden, R. N.	Greensboro
*Hardin, E. R.	Lumberton
Hardin, R. H.	Banner Elk
Hardy, Ira M.	Kinston
Harper, J. H.	Snow Hill
Harper, W. T.	Southern Pines
Harrell, Geo. N.	Murfreesboro
Harrell, S. N.	Tarboro
Harrill, L. B.	Caroleen
*Harrington, Carey L.	East Laporte
Harris, Arthur G.	Fairfield
*Harris, F. R. (Hon.)	Henderson

Name	Address
Harris, John H.	Franklinton
Harrison, Edmund	Greensboro
Harrison, H. H.	Asheville
*Harriss, Andrew H. (Hon.),	Wilmington
Hart, E. R.	Wilmington
Hart, Jno. E.	Wadesboro
*Hart, V. K.	Statesville
Hartsell, F. E.	Oakboro
Hartsell, J. A.	Concord
*Hatcher, M. A.	Hamlet
Hathcock, Thos. A.	Norwood
Harvey, W. W.	Greensboro
Hayes, R. B.	Hillsboro
Hayes, A. H.	Fairmont
Hayes, B. K.	Ft. Lyon, Colo. (Granville Co.)
Haywood, Hubert (Hon.)	Raleigh
Haywood, Hubert B., Jr.	Raleigh
*Hayworth, C. A.	Asheboro
Head, W. T.	Campobello, S. C., Rt. 4 (Rutherford Co.)
*Hege, J. Roy	Winston-Salem
Heilig, Herman G.	Salisbury
Helms, T. L.	Randleman
Helsabeck, C. J.	Germanton
*Helsabeck, R. S.	Mizpah
*Hemingway, J. D.	Bethel
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Swansboro
Henderson, R. B.	Franklinton
*Henderson, S. McD.	Charlotte
Henderson, T. B.	Goldsboro
*Henry, T. B.	Rockingham
Herbert, Fred L.	Andrews
*Herbert, Wm. P.	Asheville
Herman, Chas. B.	Statesville
*Herring, Benj. S.	Wilson
*Herring, R. A.	Greensboro
*Hester, Jos. R.	Knightdale
Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
*Hicks, V. M.	Raleigh
Highsmith, Chas.	Dunn
*Highsmith, J. D.	Fayetteville
*Highsmith, J. F. (Hon.),	Fayetteville
Highsmith, Seavy	Fayetteville
Highway, S. C.	Murphy
Hill, David J.	Lexington
Hill, J. N.	Murphy
Hill, W. Lee	Lexington, Rt. 4
*Hill, Wm. I.	Albemarle
*Hines, E. R.	Rocky Mount
Hinnant, Milford	Micro
*Hipp, Edw. R.	Charlotte
Hipps, A. G. T.	Asheville
*Hobgood, J. E.	Thomasville
*Hocutt, Battle A.	Clayton
Hodges, Jos. M.	Boone
Hodgin, H. H.	Red Springs
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Hertford, Rt. 3
Holden, E. C.	High Point
Hollingsworth, E. M.	Mount Airy
*Hollingsworth, E. T.	Clinton
Hollingsworth, R. E.	Mount Airy
Holloway, O. W.	Durham
Holloway, Robt. L.	W. Durham
Hollyday, W. M.	Asheville
Holmes, A. B.	Fairmont
Holt, D. W.	Greensboro
Holt, E. E.	Southern Pines
Holt, R. B.	Cherokee
Holt, T. J.	Warrenton
*Holt, Wm. P.	Duke
Holt, Wm. T.	McLeansville
Honnett, Joseph H.	Wilmington
Hood, J. Sidney	Kings Mountain
*Hooker, John S.	Tarboro
Hooks, Thel	Smithfield
Hooper, D. D.	Sylva
Hooper, Jos. W.	Wilmington
Hoover, C. H.	Denver
Hoover, H. R.	Wilson
Horton, M. C.	Raleigh
*Horton, W. C.	Raleigh
Houck, Albert F. (Hon.)	Lenoir
House, W. H.	Goldsboro
Houser, E. A.	Shelby
Houser, O. J.	Charlotte
Houser, W. H.	Cherryville
Hovis, L. W.	Charlotte
Howard, J. R.	Bonlee
Howe, Wm. B. W., Jr.,	Hendersonville
Howell, W. L.	Ellerbe

Name	Address
Hoyle, Hughes B.	Manteo
Hubbard, Chas. C.	Farmer
*Hubbard, Fred C., North Wilkesboro (Member Iredell-Alexander)	
*Hudson, C. C.	Greensboro
Huffines, T. R.	Asheville
Hughes, F. W. (Hon.)	New Bern
*Hunnicutt, Wm. J.	Asheville
Hunsucker, Chas. R.	Hickory
Hunt, J. F.	Spindale
Hunt, W. Bryce	Lexington
Hunter, J. P.	Cary
Hunter, J. V.	Asheboro
Hunter, L. W. (Hon.), Charlotte, Rt.1	
Hunter, M. C.	Huntersville
*Hunter, Myers	Charlotte
Hunter, Norman C.	Rockingham
Hunter, W. B.	Gastonia
*Hurdle, S. W.	Winston-Salem
Huston, Jno. W.	Asheville
*Hutchins, E. M.	North Wilkesboro
*Hutchinson, S. S.	Bladenboro
Hyatt, A. L.	Kinston
Hyatt, Fred C.	Greensboro
Ingram, Chas. B. (Hon.)	Mt. Gilead
Irwin, Hamner C.	Pocatella, Idaho (Mecklenburg Co.)
Irwin, Henderson	Goldsboro
*Irwin, J. R. (Hon.)	Charlotte
Isley, W. P.	Burlington, Rt. 1
Ivey, H. B.	Goldsboro
*Ivey, R. R., U. S. P. H. S.	Biltmore
*Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatesville
*Jackson, Walter L.	High Point
*James, Albert W.	Hamlet
*James, F. P.	Laurinburg
*James, W. D.	Hamlet
*Jarboe, Parran	Greensboro
Jarman, F. G.	Roanoke Rapids
Jenkins, Chas. L. (Hon.)	Raleigh
Jerome, Jas. R.	Wingate
*Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.)	Wilmington
John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
*Johnson, Floyd	Whiteville
*Johnson, Geo. W.	Wilmington
*Johnson, Harry H.	Louisburg
Johnson, John B.	Old Fort
Johnson, N. M. (Hon.)	Durham
*Johnson, R. Lee	Gastonia
Johnson, Robt. W.	Apex
*Johnson, Thos. C.	Lumberton
Johnson, W. A., Reidsville, R. F. D.	
Johnson, W. C.	Canton
*Johnson, W. M.	Winston-Salem
*Johnston, J. G.	Charlotte
Johnston, W. W.	Manteo
Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
Jones, Arthur O.	Greensboro
*Jones, Beverly N.	Winston-Salem
Jones, Clara E.	Goldsboro
Jones, C. M. (Hon.)	Grimesland
*Jones, R. Duval	New Bern
*Jones, R. Rives	Brooklyn, N. Y. (Forsyth Co.)
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
*Jones, Wm. M.	Greensboro
Jordan, Chas. S.	Asheville
Jordan, T. M. (Hon.)	Raleigh
*Jordan, Wm. S.	Fayetteville
Judd, Eugene C.	Raleigh
Judd, James M.	Varina
*Julian, Chas. A. (Hon.)	Thomasville
*Jurney, Peter Claywell	Turnersburg
Justice, Gaston B.	Marion
Justice, L. H.	Littleton
*Justice, Z. K.	Davidson
Kafer, Oswald O.	Edward
Kapp, Henry H.	Winston-Salem
Keiger, Jas. A.	Greensboro
*Keiger, O. R.	Winston-Salem
Kendrick, R. L.	Elizabeth City
Kennedy, Geo. W.	Beulaville
*Kennedy, John P.	Charlotte
*Kent, Alfred A.	Lenoir
Kernodle, Chas. E.	Elon College
Kerns, T. C.	Durham
*Kerr, Jas. E.	Winston-Salem
Kerr, John D.	Clinton
Ketchie, J. M.	Salisbury

Name	Address
Kibler, W. H.	Morganton
Killian, P. B.	Haynesville
King Edward	Asheville
King, Parks M.	Charlotte
King, Richard M.	Concord
*Kinlaw, W. B.	Rocky Mount
Kinsman, Henry F.	Hamlet
Kirby, Guy S.	Marion
Kirk, W. R.	Hendersonville
Kirkpatrick, W. L.	Waynesville
*Kirksey, James J.	Morganton
Kirksey, W. A.	Hope Mills
Kiser, W. C.	Reepsville
*Kitchin, Thurman D.	Wake Forest
Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
Kluttz Dewitt	Washington
*Knight, Wm. P.	Greensboro
Knoefel, A. E.	Black Mountain
*Knowles, D. L.	Rocky Mount
*Knox, A. W. (Hon.)	Raleigh
Knox, John, Jr.	Lumberton
Koonce, S. Everett	Wilmington
*Kornegay, Lemuel W.,	Rocky Mount
Lackey, F. H.	Shelby
Lackey, M. A.	Mooresville
Lafferty, Robt. H.	Charlotte
*Lambert, W. L.	Asheboro
Lambert, C. F.	Spruce Pine
Lamm, Isaac W.	Lucama
Lancaster, F. J.	Lexington
*Lancaster, R. Mc	Mt. Airy
Landen, J. F.	Chinquapin
Lane, John L.	Rocky Mount
*Lane, M. E.	Pinetops
Lane, P. P.	Wilson
Lapham, Mary E.	Highlands
Large, H. Lee	Rocky Mount
Larkin, E. W.	Weldon
Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
Latham, Jos. R.	New Bern
Laton, Jas. F.	Albemarle
Lattimore, E. B.	Shelby
*Laughinghouse, Chas. O'H. (Hon.),	Greenville
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Leak, Wharton G.	East Bend
*Ledbetter, Jas. McQ.	Rockingham
Lee, J. Marshall	Newton Grove
Lee, Lawrence V.	Lattimore
Lee, R. E.	Lincolnton
*Lee, S. E.	Sanatorium
Lee, S. J. P.	Benson
Leggett, K. (Hon.)	Hobgood
*Leinbach, Robt. F.	Charlotte
*Lentz, C. M.	Albemarle
Lewis, Geo. W. (Hon.)	Wilson
Lewis, H. W. (Hon.)	Jackson
Lewis, Richard H. (Hon.)	Raleigh
Lewis, S. V.	Greensboro
*Liles, N. P.	Lilesville
*Lilly, Jas. M.	Fayetteville
*Linney, R. Z.	Charlotte
*Linville, A. Y. (Hon.),	Winston-Salem
Linville, W. C.	Goldsboro
Lister, E. W.	Weeksville
Lister, J. L.	Leaksville
Little, E. E.	Statesville
*Livingston, E. A.	Gibson
Lloyd, B. B.	Chapel Hill
*Locke, Eva M.	Greensboro
Lockett, Everett A.	Winston-Salem
Logan, F. W. F.	Rutherfordton
Long, Benj. L. (Hon.)	Hamilton
*Long, Benj. Leroy	Glen Alpine
Long, Edgar M.	Hamilton
*Long, E. F.	Raleigh
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F. (Hon.)	Statesville
*Long, J. W. (Hon.)	Greensboro
Long, R. H.	Morganton
Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
Long, Walter T.	Roxboro
Looney, J. J. W.	Rocky Mount
Lord, Marjery J.	Black Mountain
Lott, H. S.	Winston-Salem
Love, Bedford E.	Roxboro
Love, Wm. M.	Unionville
Lovelace, Thos. C.	Henrietta
Lovill, Robt. J.	Mount Airy
*Lowery, Jno. R.	Raleigh

Name	Address
Lubchenko, N. E.	Harrisburg
*Lutterloh, I. Hayden, Jr.	Sanford
*Lutterloh, I. H., Sr.	Sanford
Lyday, Abram E.	Penrose
Lyday, C. E.	Gastonia
Lyday, Wm. Monroe	Brevard
Lyle, S. H.	Franklin
Lynch, Geo. B.	Brevard
Lynch, J. M.	Asheville
*Lyon, B. R.	Greensboro
Lyon, Henry Wise	Windsor
*MacConnell, John W.	Davidson
*MacFadyen, Paul R.	Concord
MacKethan, John A.	Fayetteville
*MacNider, Wm. deB.	Chapel Hill
MacPherson, G. S.	Asheville
*MacRae, J. D.	Asheville
*McAdams, C. R.	Belmont
*McAndrews, P. H.	Ft. Bragg
*McAnally, Wm. J.	High Point
*McBrayer, L. B.	Southern Pines
McBrayer, R.	Shelby
McBryde, M. H.	Reidsville
McCabe, J. L.	Elizabeth City
*McCain, P. P.	Sanatorium
*McCain, Wm. R.	High Point
McCall, A. C.	Asheville
McCampbell, John	Morganton
McCanless, Wm. V.	Danbury
*McClees, E. C.	Elm City
McClees, Jas. E.	Creswell
McClelland, J. O.	Maxton
McColgan, J. W.	Sanford
McCombs, C. J.	Gastonia
McCotter, St. Elmo	Bayboro
McCracken, C. M.	Fairview
McCracken, J. R.	Waynesville
*McCreary, A. B.	Rockingham
McCuiston, A. M.	Raleigh
McCutcheon, W. B.	Durham
McDade, B. B.	Corbett, Rt. 1
McDaniel, L. E.	Lasker
*McDonald, A. A.	Jackson Springs
McDowell, F. C.	Zebulon
*McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
McFadyen, O. L.	Fayetteville
*McGeachy, R. S. (Hon.)	Kinston
*McGee, Jas. W. (Hon.)	Raleigh
*McGehee, Jno. Wm.	Reidsville
McGoogan, Benj. J.	McFarlan
*McGougan, J. V.	Fayetteville
McGowan, Claudius	Plymouth
McIntosh, D. M.	Old Fort
McIntosh, W. R.	Rockingham
*McIver, Lynn	Sanford
*McKay, H. W.	Charlotte
*McKay, Jos. F.	Buies Creek
McKay, W. P.	Fayetteville
McKee, John S.	Raleigh
McKenzie, B. W.	Salisbury
*McKenzie, Wm. W. (Hon.),	Salisbury
*McLaughlin, C. S.	Charlotte
McLaughlin, J. E. (Hon.)	Statesville
McLean, Allen	Wagram
McLean, John W.	Godwin
McLean, Peter	Laurinburg
McLemore, Geo. A.	Clayton, R. F. D.
McLeod, A. H.	Aberdeen
McManus, H. F.	Matthews
McManus, W. L.	Greensboro
*McMillian, B. F. (Hon.),	Red Springs
*McMillan, J. M.	Candor
*McMillian, R. D.	Red Springs
McMillan, W. D. (Hon.),	Wilmington
McNairy, Caroline	Lenoir
*McNairy, C. Banks	Kinston
*McNeill, Jas. W. (Hon.),	Fayetteville
McPhail, L. D.	Charlotte
*McPhaul, W. A.	Charlotte
*McPherson, C. W.	Burlington
McPherson, R. G.	Saxapahaw
McPherson, S. D.	Durham
*Macon, G. H.	Warrenton
*Mahoney, A. F.	Monroe
Mallett, E. P.	Hendersonville
Malone, J. Y.	Asheville
Malone, James E.	Louisburg
Malloy, S. A.	Yanceyville
Maness, J. M.	Ellerbee
Mangum, C. P.	Kinston
*Mann, I. Thurman	High Point
Mann, S. M.	Moyock
*Manning, I. H.	Chapel Hill
*Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven

Name	Address
Markham, Blackwell	Durham
*Marr, M. W.	Pinehurst
Marriott, Henry B.	Battleboro
Marsh, Frank B.	Salisbury
*Marshall, Maj. Thos. R.	Ft. Bragg
*Martin, J. A.	Lumberton
Martin, J. F.	Benson
Martin, J. H.	Red Oak
Martin, J. W.	Roanoke Rapids
Martin, Lester P.	Mocksville
Martin, Moir S.	Mt. Airy
Martin, Sydnor L.	Leaksville
Martin, W. C.	Mocksville
Martin, Wm. F.	Charlotte
Martin, W. J.	Davidson
Mason, Manly	Beaufort
Massey, C. C.	Smithfield
*Matheson, Jas. P.	Charlotte
Matthews, Jas. O.	Clinton, R. F. D.
*Matthews, M. L.	Sanford
Matthews, Vann M.	Charlotte
Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
*Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill
Mayerberg, I. W.	Selma
Maynard, J. D.	Wadesboro
*Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
Melvin, W. C.	Linden
Menzies, H. C.	Hickory
Meriwether, B. M.	Asheville
Meroney, B. B.	Murphy
Merritt, John H.	Woodsdale, R. 2
Michaux, Edward R.	Greensboro
Miles, May S.	Greensboro
Millander, C. W.	Asheville
*Miller, J. F.	Marion
Miller, Oscar L.	Gastonia
*Miller, R. C.	Cramerton
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
Mills, C. H. C.	Charlotte
*Mimms, C. W.	Winston-Salem
*Minor, Charles L.	Asheville
*Misenheimer, C. A. (Hon.)	Charlotte
*Mitchell, C. P.	Jackson
Mitchell, Geo. W.	Wilson
Mitchell, Jesse H.	Ahoskie
Mitchell, Paul H.	Ahoskie
*Mitchell, R. C.	Mt. Airy
Mitchell, W. F.	Shelby
Mitchener, J. S.	Raleigh
Mock, Frank L.	Lexington, R. 3
Monk, Henry L.	Salisbury
*Monroe, J. P.	Sanford
*Monroe, W. A. (Hon.)	Sanford
Montague, S. J.	Durham
Montgomery, Harry M.	Burlington
*Montgomery, John C. (Hon.),	Charlotte
Montgomery, K. E.	Waynesville
Moore, Alexander W.	Charlotte
Moore, B. D.	Mt. Holly
Moore, Baxter S.	Charlotte
*Moore, Chas. Edward	Greensboro
Moore, Chas. E. (Hon.)	Wilson
Moore, D. B.	Badin
Moore, Edwin G. (Hon.)	Elm City
Moore, Henry B.	Morven
Moore, Jos. N.	Marshall
*Moore, Julian A.	Wilmington
*Moore, K. C.	Wilson
*Moore, Oren	Charlotte
Moore, R. A.	Gastonia
Moore, T. V.	Acme
Moore, W. B.	Lawsonville
Moore, W. Houston	Wilmington
Moore, Wm. James	Ashboro
Moorer, M. P.	Asheville
Morefield, R. H.	Westfield, R. F. D. 1
Morgan, B. E.	Asheville
Morrill, D. S.	Farmville
Morrill, Jenness	Falkland
*Morris, Carlyle	Maxton
Morris, Geo. B.	Goldsboro
*Morris, Jos. A.	Oxford
Morrow, Wm. C.	Andrews
Morton, J. X.	Faison
Moseley, Chas W.	Greensboro
Moseley, H. P.	Farmville
Moser, W. D.	Burlington
*Mudgett, W. C.	Southern Pines
Munroe, H. Stokes	Charlotte
*Munroe, J. P. (Hon.)	Charlotte
Munt, H. F.	Winston-Salem
*Murchison, D. R.	Wilmington
Murphy, D. P.	Rutherfordton
*Murphy, John G.	Wilmington

Name	Address
Murphy, W. B.	Snow Hill
Murray, R. L.	Raeford
*Myers, Alonzo	Charlotte
*Myers, John Q.	Charlotte
Myers, R. W.	Fullers, Rt. 1
*Nalle, B. C.	Charlotte
Nance, C. L.	Charlotte
*Nash, J. Fred	St. Paul
*Neal, John W.	Monroe
*Neal, Kemp P.	Raleigh
Neal, Paul N.	Raleigh
Nelson, R. J. (Hon.)	Robersonville
Nesbitt, Charles T.	Akron, Ohio (New Hanover Co.)
Newbern, J. M.	Jarvisburg
Newby, G. E.	Hertford
Newcombe, A. P., Jr.	Henderson
*Newell, H. A.	Henderson
Newell, J. O	Louisburg
Newell, Leone B.	Charlotte
*Newman, Harold H.	Salisbury
Newton, Howard L.	Charlotte
Nichols, Alvin A.	Sylva
Nichols, Austin F.	Roxboro
Nichols, Asbury S.	Sylva
Nichols, Rhodes E.	Durham, R. 8
Nicholson, B. M.	Enfield
Nicholson, J. L.	Washington
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
Nisbet, D. Heath	Charlotte
*Nisbet, Walter O.	Charlotte
Noble, R. J. (Hon.)	Selma
*Noble, R. P.	Raleigh
Nobles, Jos. E. (Hon.)	Greenville
Noblin, Roy L.	Stovall
Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norburn, C. S.	Asheville
Norfleet, E. P.	Roxobel
Norfleet, L. E.	Tarboro
Norman, J. S.	Columbia
Norris, Henry	Rutherfordton
*Northington, J. M.	Charlotte
Nowell, S. C.	Hickory
Oates, George	Grover
*O'Briant, A. L.	Cameron
Ogburn, H. H.	Greensboro
Olive, P. W.	Fayetteville
Oliver, A. S.	Benson
Orr, Chas. C.	Asheville
Orr, P. B.	Asheville
*Orr, W. J. B.	Smithfield
*Outland, C. L.	Greenville
*Pace, K. B.	Greenville
Packard, F. S.	Norlina
Packard, G. H.	Meredith, N. H. (Madison, Co.)
*Paddison, J. R.	Kernersville
Page, B. W.	Maysville
Palmer, Horace	Hollister
*Palmer, R. W.	Gulf
Parker, Clifton G.	Woodland
Parker, C. P.	Seaboard
Parker, James R.	Clinton
Parker, G. E.	Benson
Parker, H. R.	Greensboro
*Parker, John Rainey	Burlington
*Parker, O. L.	Clinton
Parker, Walter R.	Woodland
Parrott, Albert DeK.	Kinston
*Parrott, Jas. M. (Hon.)	Kinston
Parrott, M. C.	Kinston
Parrott, Wm. T.	Kinston
Parry, Leo D.	Charlotte
*Parsons, W. H.	Ellerbe
*Pate, F. J.	Greensboro
*Pate, Jas. G.	Gibson
Patrick, Geo. R., Jr.	Bessemer City
Patrick, J. E.	Bahama
Patrick, L. N.	Gastonia
Patterson, Jno. A.	Concord
Patterson, Reid	Charlotte
Payne, R. L.	Monroe
Pearson, Raymond	Monroe
Peck, Edward J.	Hot Springs
Peek, W. A.	Ramsaytown
Peeler, Clarence N.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
Peete, C. H.	Warrenton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
*Perkins, David R.	Marshville
*Perkins, Jno. R.	Winston-Salem
Perkins, S. L.	Ronda

Name	Address
Perry, A. H.	Wood
*Perry, D. R.	Southern Pines
Perry, E. M.	Rocky Mount
Perry, H. B.	Valle Crucis
Perry, H. G.	Louisburg
Perry, Robt. E.	Greensboro
Person, Edgar C.	Pikeville
Person, H. M.	Goldsboro
Person, J. B.	Selma
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
Peterson, W. C.	Wilmington
Petrie, Robt. Wm.	Charlotte
Petteway, Geo. H.	Charlotte
*Pfohl, Samuel F.	Winston-Salem
Pharr, Wm. W. (Hon.)	Charlotte
Phifer, Edward M.	Morganton
*Phillips, C. C.	Charlotte
*Phillips, C. H.	Thomasville
Phillips, J. W.	Lillington
Phillips, M. D. (Hon.)	Dalton
Pickett, John A., Burlington, R.F.D. 1	
Pierce, S. B.	Weldon
*Pittman, R. L.	Fayetteville
Pitts, W. I	Lenoir
Plyler, R. J.	Salisbury
Pollard, W. B.	Winton
Pollard, Raymond	New Bern
*Pool, B. B.	Winston-Salem
Poole, Claude T.	St. Pauls
Pope, Henry T.	Lumberton
Poston, J. Lewis	Statesville
Powell, H. H.	Stantonsburg
Pressly, Geo. W. (Hon.)	Charlotte
Pressly, J. M.	Belmont
Price, H. L.	Fairmont
Primrose, R. S.	New Bern
*Pritchard, A. T.	Asheville
Pritchard, Jno. L.	Windsor
Pritchett, H. W.	Reidsville
Proffitt, Thos. J.	Elk Park
*Proctor, I. M.	Raleigh
*Pruitt, G. C.	Monroe
Pugh, Chas. H.	Gastonia
Purdy, J. J.	Oriental
*Purington, H. H.	Durham
Putney, R. H.	Elm City
Putney, W. R.	Littleton
Query, Richard Z.	Charlotte, R. F. D.
Quickel, Thos. C.	Gastonia
*Quillen, Emile B.	Rocky Mount
Quinn, Robert F.	Magnolia
*Raby, J. G.	Tarboro
*Rainey, W. T.	Fayetteville
Ramsey, James G.	Salisbury
*Rankin, P. R.	Mount Gilead
Rankin, S. W.	Concord
*Rankin, Watson S.	Raleigh
*Ranson, J. Lester	Charlotte
Ray, Hickman,	Durham
Ray, F. L.	Charlotte
*Ray, John B.	Leaksville
Ray, O. L.	Raleigh, Rt. 1
Ray, R. C.	Beaver Creek
*Reaves, C. R.	Greensboro
Reaves, W. P.	Greensboro
Redding, Alex. H.	Cedar Falls
*Redfern, T. C.	Winston-Salem
Reed, D. H.	Kenansville
Reed, John F.	Concord
Reeves, A. F.	Asheville
Reeves, B. E.	W. Jefferson
Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
Reid, Thos. N.	Matthews
Reitzel, C. E.	High Point
Reynolds, C. V. (Hon.)	Asheville
Reynolds, T. F.	Canton
Rhodes, James S.	Wiliamston
*Rhyne, Robt. E.	Gastonia
Richardson, Jas. C.	Monroe
Richardson, F. H.	Black Mountain
Ricks, Leonard E.	Fairmont
*Riddle, J. B.	Morganton
Riggsbee, A. E.	Morrisville
Ring, Joseph W.	Elkin
Ringer, Paul H.	Asheville
Roberson, Charles	Greensboro
*Roberson, Foy	Durham
Roberson, Geo. B.	Greensboro
Roberson, Mike	Durham
Roberts, Frank	Marshall

Name	Address
*Robertson, James F.	Williamston
*Robertson, J. N.	Fayetteville
*Robinson, J. D.	Wallace
Robinson, W. F.	Mars Hill
Robinson, W. J.	Creston
Rodgers, W. D.	Warrenton
*Rodman, J. C. (Hon.)	Washington
Rodwell, John W.	Mocksville
Rogers, Jas. Rufus	Raleigh
Rogers, W. A.	Franklin
*Root, Aldert S.	Raleigh
Rose, A. H.	Smithfield
Rose, David J.	Goldsboro
*Ross, Geo. H.	East Durham
*Ross, Otho B.	Charlotte
Ross, Robt. D.	Wadesboro
*Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
*Royal, Ben F.	Morehead City
*Royall, M. A.	Elkin
*Royster, Hubert A. (Hon.)	Raleigh
Royster, S. S.	Shelby
Royster, Thos. H.	Tarboro
*Royster, Thos. S.	Henderson
Royster, W. I. (Hon.)	Raleigh
Rozier, R. G.	St. Pauls
*Ruark, W. T.	Elizabethtown
Rucker, A. A.	Rutherfordton
Rudisill, J. D.	Cherryville
Ruffin, J. B.	Powellsville
Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Sadler, R. C.	Whiteville
Saliba, John	Elizabeth City
Saliba, M. M.	Wilson
Salley, E. McQueen	Saluda
Salmons, H. C.	Elkin
Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
Sams, W. A.	Marshall
Sanders, F. H.	Cramerton
Saunders, Jos. H.	Williamston
Saunders, S. A.	Aulander
Sawyer, Chas. J.	Windsor
Sawyer, James	Asheville
Sawyer, W. W.	Elizabeth City
Scanlon, W. G.	Charlotte
Schallert, P. O.	Winston-Salem
*Schaub, O. P.	Winston-Salem
Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
*Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scruggs, F. B.	Cliffside
Scruggs, W. H.	Asheville
*Scruggs, W. Marvin	Charlotte
Seay, T. W.	East Spencer
Sessoms, E. T.	Autryville
Sevier, D. E.	Asheville
Sevier, J. T.	Asheville
Sexton, C. Hector	Dunn
*Shafer, Irving E.	Salisbury
*Shamburger, J. B. (Hon.)	Star
*Sharpe, C. R.	Lexington
*Sharpe, F. A.	Greensboro
Sharpe, Frank L.	Statesville
Sharpe, O. L.	Greensboro
*Shaver, W. T.	Badin
*Shaw, W. G.	Wagram
*Shepard, F. A.	Liberty
Shellum, O. W.	Lowesville
Sherrill, C. L.	Statesville
*Shields, Henry B.	Carthage
Shirley, H. C.	Charlotte
Shohan, Jos.	Greensboro
*Shore, Clarence A.	Raleigh
Shuford, Jacob H.	Hickory
*Shull, J. Rush	Charlotte
Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Creedmore
Simmons, John O.	Charlotte
Simmons, L. L.	Greensboro
*Simmons, R. R.	Winston-Salem
Singletary, G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
*Sisk, C. N.	Winston-Salem
*Skinner, Louis C.	Greenville
*Slate, John S.	Winston-Salem
Slate, J. W.	High Point
Slate, Wesley C.	Spencer
*Sloan, D. B.	Wilmington
*Sloan, H. L.	Charlotte
*Sloan, James M.	Gastonia

Name	Address
Sloan, Wm. H.	Garland
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
Small, Victor R.	Clinton
Smith, A. Jones	Black Creek
Smith, B. R.	Asheville
Smith, C. T.	Rocky Mount
*Smith, F. C.	Durham
Smith, G. M.	Monroe
Smith, James B. (Hon.),	Pilot Mountain
Smith, James T.	Westfield
Smith, John McN.	Rowland
Smith, Joseph	Greenville
*Smith, Jos. E.	Windsor
*Smith, L. J.	Wilson
Smith, O. F.	Scotland Neck
*Smith, Owen	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, Robt. W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, Wm. H.	Goldsboro
Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
*Snipes, E. P. (Hon.)	Jonesboro
Somers, L. P.	New Castle
Sossoman, J. C.	Midland
Sowers, Jacob L.	Lexington
*Sowers, Roy G.	Jonesboro
Spainhour, Ellis H.	Winston-Salem
Sparrow, Thos. D.	Charlotte
*Speas, D. C.	Winston-Salem
*Speas, W. P.	Hickory
Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, John W.	Roper
Speight, J. P.	Rocky Mount
Spencer, Frederick B.	Salisbury
Spencer, Wm. O. (Hon.),	Winston-Salem
Spicer, John	Goldsboro
*Spicer, R. W.	Winston-Salem
*Spicer, William	Goldsboro
Spoon, A. O.	Greensboro
Spoon, John R.	Burlington
*Spoon, S. C., Jr.	Graham
Sprinkle, C. N.	Weaverville
*Spruill, Jos. L.	Jamestown
Sprunt, W. H., Jr.	Winston-Salem
*Squires, Claude B.	Charlotte
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.),	Lumber Bridge
Stanford, Lois Foote	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
*Stanton, T. M.	High Point
*Starr, H. F.	Greensboro
Steel, Wm. C.	Mt. Olive
*Stevens, M. L. (Hon.)	Asheville
Stevens, R. S.	Princeton
Stevens, Samuel A.	Monroe
*Stewart, H. D.	Monroe
Stewart, J. T.,	Summerfield, R. F. D.
Stockton, W. I.	Carthage, R. F. D.
Stokes, Jas. E.	Salisbury
*Stokes, P. B.	Kings Mountain
Stokes, R. L.	Brevard
Stone, Grady E.	King
Stone, Wesley M.	Dobson
Stoner, I. J.	West Durham
Straughan, J. W.	Warsaw
*Street, C. A.	Winston-Salem
Street, M. E.	Glendon
Strickland, E. F. (Hon.),	Winston-Salem
Strickland, E. L.	Wilson
Strickland, W. M.	Wendell
Stringfellow, Jas. L.	Sunburst
Stringfield, S. L.	Waynesville
Stringfield, Thomas	Waynesville
*Strong, Chas. M.	Charlotte
Strong, Wm. M.	Charlotte
*Strosnider, Chas. F.	Goldsboro
Suiter, W. G.	Weldon
Sullivan, Claude H.	Charlotte
Summerelle, E. M. (Hon.)	China Grove
Summers, Chas. L. (Hon.),	Baltimore, Md. (Forsyth Co.)
*Summey, T. J.	Brevard
*Sumner, G. H.	Asheboro
Sumner, Wm. I.	Randleman
Sumner, Thos. W.	Fletcher
Sutton, Carl W.	Richlands
Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
*Swindell, C. L.	Wilson
*Swindell, Lewis H.	Washington

Name	Address
Tally, B. T.	Albemarle
Tally, J. S.	Troutman
*Tankersley, J. W.	Greensboro
Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, M. McI.	Goldsboro
Tatum, Roy C.	Statesville
Tatum, Walter Lowe	Salisbury
*Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.	Washington
*Tayloe, John Cotton	Washington
*Tayloe, Joshua	Washington
Taylor, B. C.	Mount Holly
*Taylor, E. H. E.	Morganton
*Taylor, F. R.	High Point
*Taylor, H. A.	New Bern
Taylor, H. C.	Charlotte (Chadwick Sta.)
Taylor, James N.	Burlington
*Taylor, James T.	Madison
Taylor, S. R.	Greensboro
Taylor, T. G.	Leaksville
*Taylor, W. I.	Burgaw
*Taylor, Wm. L.	Oxford
Taylor, Wm. S.	Mount Airy
Teague, S. E.	Hamlet
*Templeton, James M.	Cary
Tennent, G. S.	Asheville
*Terry, J. R.	Lexington
*Terry, Wm. Calvin	Hamlet
Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, Wm. J.	Tarboro
Thomas, J. G.	Greensboro
*Thomas, W. Clyde	Siler City
*Thomas, Wm. N.	Oxford
Thompson, A. C.	Asheville
*Thompson, A. F.	Troy
*Thompson, C. D.	High Point
*Thompson, Cyrus	Jacksonville
Thompson, E. S.	Winston-Salem
Thompson, Hugh A.	Raleigh
*Thompson, Joseph W.	Creedmore
Thompson, S. R.	Charlotte
Thompson, S. W., Jr.,	Morehead City
Thompson, W. A.	Rutherfordton
Thorp, A. T.	Rocky Mount
Thurston, Asa	Taylorsville
Tidwell, J. E.	Andrews
Tillotson, S. F.	King
Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, R. E.	Youngsville
Todd, L. C.	Charlotte
Toole, A. F.	Asheville
*Townsend, M. L.	Raleigh (Member Mecklenburg Co.)
Tranthum, H. T. (Hon.)	Salisbury
Triplett, W. R.	Purlear
Trivette, W. A.	Hamptonville
Troxler, R. M.	Burlington
*Tucker, Jno. H.	Charlotte
Tugman, B. W.	Warrensville
Tull, Henry (Hon.)	Kinston
Turlington, H. C.	Dunn
Turner, H. G.	Raleigh
Turner, J. M.	North Wilkesboro
*Turner, J. P.	Greensboro
*Tuttle, A. F.	Spray
*Tuttle, Reuben G.	Winston-Salem
*Twitty, John C.	Rutherfordton
Tyner, Carl V.	Leaksville
Tyson, T. D.	Mebane
*Underwood, O. E.	Roseboro
Upchurch, C. G.	Apex
Upchurch, Robt. T.	Henderson
Utley, H. H.	Benson
Valk, A. deT.	Winston-Salem
Van Epp, Owen B.	East Laport
Vann, Elizabeth	Morganton
Vann, H. M.	Wake Forest
Vann, J. R., Jr.	Spring Hope
*Van Poole, Carl M., Jr.	China Grove
*Van Poole, C. M. (Hon.)	Salisbury
Vaughan, J. C.	Rich Square
*Verdery, W. C.	Fayetteville
Vernon, Jas. W.	Morganton
Vestal, Willis J. (Hon.)	Lexington
*Vick, Geo. D.	Selma
*Von Zelinski, Maj. W. F., Ft. Bragg	
Wadsworth, H. B.	New Bern
Wadsworth, Wm. H.	Concord
*Wakefield, Harry A.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville

Name	Address
Walker, L. A.	Burlington
Walker, L. D.	Charlotte
Walker, L. K.	Ahoskie
Walker, Walter E.	Burlington
*Wall, R. L.	Winston-Salem
Wallace, W. J.	Brevard
*Walters, Chas. M.	Burlington
*Wannamaker, Edw. J., Jr.,	Charlotte
Ward, Jesse E.	Robersonville
*Ward, John LaB.	Asheville
Ward, Vernon A.	Robersonville
Ward, Wm. H. (Hon.)	Plymouth
Waring, E. S.	Durham
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
Warren, Wm. E.	Williamston
Warrick, L. A.	Goldsboro
Washburn, B. E.	Constant Spring, Jamaica (Wake Co.)
Watkins, Fonso B.	Morganton
Watkins, Geo. S.	Oxford
*Watkins, G. T., Jr.	Durham
*Watkins, W. M.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Watson, Thos. M.	Wilmington
*Way, J. Howell (Hon.),	Waynesville
Weathers, Bahnson	Roanoke Rapids
Weaver, Henry B. (Hon.),	Asheville
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, M. L.	Mayodan
Webb, S. Edgar	Draper
Webb, W. P.	Rockingham
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
West, C. F.	Kinston
West, Louis N.	Raleigh
West, Robert M.	Salisbury
West, T. M.	Fayetteville
Weyher, V. E.	Kinston
*Wharton, Chas. R.	Ruffin
*Wharton, L. D. (Hon.)	Smithfield
Wheeler, J. H.	Henderson
Whelpley, Frank L.	Goldsboro
Whichard, M. P.	Edenton
*Whisnant, Albert M.	Charlotte
Whitaker, A. C.	Julian
Whitaker, F. C.	Enfield
Whitaker, Fred'k A.	Kinston
Whitaker, F. S.	Kinston
Whitaker, Paul F.	Kinston
*Whitaker, R. B.	Whiteville
White, John W. (Hon.),	Wilkesboro
White, R. A.	Asheville
White, Thos. P.	Charlotte
White, W. M.	Lenoir
Whitehead, John (Hon.)	Salisbury
Whitehead, J. P.	Rocky Mount
*Whitehead, S. L.	Lumberton
Whitehurst, E. B.	Marshallberg
Whitfield, Wm. Cobb (Hon.),	Grifton
Whitley, A. D. N.	Unionville
Whitley, Ayer	Matthews, R. F. D.
*Whittington, Jas. B.,	Winston-Salem
Whittington, W. P. (Hon.),	Asheville
Whittington, W. W.	Snow Hill
Wilcox, J. W.	Laurel Hill
Wilkerson, Charles B.	Raleigh
*Wilkerson, Charles E.	Randleman
Wilkerson, J. B.	Rosman
Wilkerson, T. E., Jr.	Raleigh
Wilkes, Grover C.	Sylva
Wilkes, Marcus B.	Laurel Hill
*Wilkins, J. C.	Haw River
Wilkins, J. W.	Mount Olive
Wilkins, R. B.	Raeford
Wilkins, Samuel A.	Dallas
*Wilkinson, C. T.	Wake Forest
Wilkinson, R. W., Jr.	Wake Forest
Williams, Albert F.	Wilson
Williams, B. B.	Greensboro
Williams, Claude B.	Elizabeth City
Williams, Edward J.	Monroe
Williams, James Marcus	Warsaw
*Williams, J. H.	Sanatorium
Williams, John D.	Guilford Station
*Williams, John W.	Washington
*Williams, L. P.	Edenton
Williams, R. C.	Wallace
Williams, Wm. Norman	Tabor
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
*Willis, H. C.	Wilson
Willis, W. M.	Greenville
Wilson, Albert R. (Hon.),	Greensboro
Wilson, Clarence, L.	Lenoir
Wilson, N. C.	Greensboro

Name	Address
Wilson, R. G.	Asheville
Wilson, Robert B.	Newton Grove
Wilson, W. E.	Mooresville
Wilson, W. P.	Madison
Wimberly, G. L.	Rocky Mount
Windley, C. T.	Belhaven
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Wishart, Wm. E.	Charlotte
*Witherspoon, B. J.	Charlotte
Wolfe, H. C.	Greensboro
Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
*Wood, E. J.	Wilmington
Wood, J. W.	Shelby, Rt. 3
*Woodard, A. G.	Goldsboro
Woodard, C. A.	Wilson
Woodard, E. D.	Bayboro
*Woodard, G. B.	Kenly
*Woodcock, John H.	Hendersonville (Buncombe Co.)
Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
*Woodson, Charles W.	Salisbury
*Wooten, Amos Monroe	Pinetops
Wooten, Floyd P.	Kinston
Wooten, W. I.	Greenville
Wright, J. B.	Black Mountain
Wright, J. B.	Raleigh
Wyatt, Jas. L.	Lilesville
Wyatt, H. L.	Greensboro
Wyatt, Wortham	Winston-Salem
Yarborough, R. F.	Louisburg
*Yoder, Paul A.	Sanatorium
*Yokeley, Raymond V.	Thomasville
York, Alexander Arthur	High Point
York, Hugh B.	Williamston
Young, G. M.	Postell
Young, J. J.	Clayton
Young, L. B.	Wake Forest (R.3)
*Yow, I. A.	Georgeville
Zimmerman, Robt. U.,	Lexington (R 4)
Zollicoffer, D. B.	Weldon

ROSTER OF MEMBERS FOR 1925

BY COUNTIES

NOTE.—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State License and date State Society was joined. A few did not take advantage of the opportunity, however. Anyone finding an error should report it to the secretary of the society.

ALAMANCE COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: J. A. Pickett, Burlington, Rt. 1; Univ. of Tenn. Coll. of Med., 1894	1894	1904
Secretary: R. E. Brooks, Burlington; Jeff. Med. Coll., 1920	1920	1922
Anderson, Chas. A., Burlington; Coll. P. and S., Balt., 1901	1893	1896
Brittle, Paul C., Burlington; Univ. Coll. of Med., Richmond, 1907	1907	1910
Ellington, A. J., Burlington; Columbia Univ., 1915	1915	1917
Goley, Wm. R., Graham (Hon.); P. and S., Balt., 1885	1885	1893
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Isley, W. P., Burlington, Rt. 1; Vanderbilt Coll., 1899	1899	1922
Kernodle, Chas. E., Elon College; Univ. of Md., 1911	1911	1920
McDade, B. B., Corbett, Rt. 1; Univ. of Md., 1918	1918	1920
McPherson, C. W., Burlington; Univ. of Md., 1910	1910	1912
McPherson, R. G., Saxapahaw; Univ. of N. C., 1908	1908	1909
Montgomery, Harry M., Burlington; N. C. Med. Coll., 1903	1903	1904
Moser, W. D., Burlington; Univ. of N. C., 1910	1910	1910
Parker, John R., Burlington; Univ. Coll. of Med., Richmond, 1901	1901	1917
Spoon, Charles E., Graham; Univ. of Tenn., 1907	1914	1920
Spoon, S. C., Graham; Univ. of Md., 1918	1918	1920
Taylor, Jas. N., Burlington; Med. Coll. of Va., 1901	1902	1905
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane; Univ. Coll. of Med., Richmond, 1899	1899	1904
Walker, L. A., Burlington; Univ. Coll. of Med., Va., 1898	1899	1905
Walker, Walter E., Burlington; Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington; Univ. of Md., and P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River; Univ. of Md., 1911	1911	1920

ANSON COUNTY SOCIETY

President: Robt. D. Ross, Wadesboro; N. Y. Univ., 1890	1890	1912
Secretary: Jno. E. Hart, Wadesboro; P. and S., Balt., 1897	1897	1904
Allen, Chas. I., Wadesboro; Col. Univ., Coll. P. and S., 1913	1913	1922
Bennett, Jos. H., Wadesboro; Univ. of Md., 1894	1894	1904
Covington, Platt W., Wadesboro; Univ. of Md., 1908	1908	1914
Harris, C. F., Ansonville; Jefferson Med. Coll., 1920	1920	1923
Liles, N. P., Lilesville; Med. Coll. of S. C., 1911	1911	1911
McGoogan, Benj. J., McFarlan; Univ. of Md., 1912	1912	1923

Name and Address	Licensed	Joined State Society
Maynard, J. D., Wadesboro; Univ. of N. C., 1908	1908	1922
Moore, Henry B., Morven; Jeff. Med. Coll., 1920	1920	1923
Wyatt, James L., Lilesville; Phila. Med.-Chir. Coll., 1905	1905	1913

ASHE COUNTY SOCIETY

President:		
Secretary:		
Brooks, Hugh M., Whitetops, Va.	1889*	1919
Colvard, G. T., Jefferson; Med. Coll. of Va., 1924	1924	1924
Eller, C. R., West Jefferson; N. C. Med. Coll., 1911	1915*	1917
Hagaman, J. B., Todd; Lincoln Mem. Univ., 1915	1915	1915
Jones, Thos. J., Lansing; Lincoln Mem. Univ., 1895	1889*	1885
Jones, T. Lester, Lansing; Va. Med. Coll., 1909	1909	1917
Perkins, S. L., Ronda; Balt. Med. Coll., 1891	1892	1917
Ray, R. C., Beaver Creek; Med. Coll. of Va., 1916	1916	1917
Reeves, B. E., West Jefferson; P. and S., Balt., 1891	1896*	1924
Robinson, W. J., Creston; Univ. Med. Coll., Kansas City, 1904	1907	1917
Tugman, B. W., Warrensville	1914*	1917

AVERY COUNTY SOCIETY

President: W. C. Tate, Banner Elk; Tenn. Med. Coll., 1908	1909	1912
Secretary: W. B. Burleson, Plumtree; Univ. of Md. and Coll. P. and S., Balt., 1915	1915	1916
Hardin, R. H., Banner Elk; N. C. Med. Coll., 1914	1914	1919
Proffitt, Thos. J., Elk Park; Univ. Louisville Med. Dept., 1903	1903	1914
Sloop, Eustace H., Crossnore; N. C. Med. Coll., 1905; Jeff. 1908	1905	1909

BEAUFORT COUNTY SOCIETY

President: J. C. Rodman (Hon.), Washington; Bellevue Med. Coll., 1892	1892	1895
Secretary: John Cotton Tayloe, Washington; Univ. of Pa., 1922	1924	1925
Bonner, J. B., Aurora; Univ. of Md., School Med. and Coll. P. and S., 1918	1918	1920
Brown, E. M., Washington; Bellevue Hosp. and Med. Coll., 1896	1896	1901
Carter, H. W., Washington; Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatsville; P. and S., Balt., 1893	1893	1896
Kafer, Oswald O., Edward; Univ. of Md., 1905	1905	1912
Kluttz, DeWitt, Washington; Univ. of Pa., 1918	1919	1920
Nicholson, John L., Washington; Univ. of Md. and Coll. P. and S., 1904	1904	1904
Nicholson, P. A., Washington (Hon.); P. and S., Balt., 1889	1889	1890
Nicholson, Sam T., Washington (Hon.); P. and S., Balt., 1881	1885	1885
Swindell, Lewis H., Washington; Univ. of Pa., 1916	1916	1919

*Registered.

Name and Address	Licensed	Joined State Society
Tayloe, D. T., Washington (Hon.); Bellevue Med. Coll., 1885	1885	1885
Tayloe, D. T. Jr., Washington; Univ. of Pa., 1919	1919	1922
Tayloe, Joshua, Washington; Bellevue Med. Coll., 1892	1892	1904
Williams, John W., Washington; Univ. of Md., and Coll. P. and S., 1906	1906	1906
Windley, C. T., Belhaven; P. and S. Balt., 1893	1893	1910

BERTIE COUNTY SOCIETY

President:		
Secretary: E. P. Norfleet, Roxobel; Va. Med. Coll., 1914	1914	1920
Evans, L. B., Windsor; Univ. Coll. of Med., 1900	1900	1907
Garriss, Frank H., Lewiston; Jefferson Med. Coll., 1912	1912	1918
Lyon, Henry Wise, Windsor; Univ. of Pa. Sch. of Med., 1918	1919	1920
Pritchard, John L., Windsor; P. and S., Balt., 1906	1906	1908
Ruffin, J. B., Powellsville; Univ. of the South, 1898	1906	1904
Saunders, Sheldon A., Aulander; Jeff. Med. Coll., Phila., 1914	1914	1918
Sawyer, Charles Judson, Windsor; P. and S., Balt., 1895	1895	1897
Smith, Jos. Elmer, Windsor; Va. Med. Coll., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: R. S. Cromartie, Garland; N. C. Med. Coll., 1900	1900	1915
Secretary: G. C. Singletary, Clarkton; Univ. of Pa. Sch. of Med., 1917	1917	1918
Bridger, D. H., Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Bullard, G. F., Elizabethtown; N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Clark, E. S., Clarkton; Med. Coll. of Va., 1914	1914	1915
Hutchinson, S. S., Bladenboro; N. C. Med. Coll., 1911	1911	1917
Ruark, W. T., Elizabethtown; Univ. of Md., 1915	1915	1925

BRUNSWICK COUNTY SOCIETY

President:		
Secretary:		
Goley, Wm. R., Shallotte; Univ. Coll. of Med., Richmond, 1901	1901	1904

BUNCOMBE COUNTY SOCIETY

President: Charles C. Orr, Asheville; Univ. of Md., 1904	1904	1905
Secretary: Paul H. Ringer, Asheville; Columbia Univ. P. & S., N. Y., 1904	1906	1907
Adams, J. L., Asheville; Jeff. Med. Coll., 1910	1910	1913
Alexander, Geo., Asheville; Univ. of Louisville Med. Dept., 1913	1920	1921
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920	1921	1922
Ambler, Chas. P., Asheville (Hon.); West. Reserve Univ. School of Med., 1889	1890	1891
Anderson, James G., Asheville; Univ. of N. C., 1906	1907	1910
Archer, Isaac J., Black Mountain; Northwestern Univ. Med. Sch., 1896	1905	1907

Name and Address	Licensed	Joined State Society
Bailey, K. H., Tripler Gen'l Hosp., Honolulu, Hawaii; Univ. of Pa., 1919	1919	1920
Baker, W. E., Arden; Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo. C., Asheville; Univ. of Md., 1912	1912	1912
Beall, L. G., Black Mountain; N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1912
Bowen, Herbert H., Asheville; Columbus Med. Coll., 1892	1917	1918
Brewer, J. F., Sr., Asheville; Memphis Hosp. Med. Coll., 1899	1920	1924
Briggs, Henry H., Asheville; Yale Univ. School of Med., 1897	1901	1903
Brookshire, Harley G., Asheville; N. C. Med. Coll., 1905	1905	1907
Broun, Matthew S., Asheville; Columbia Coll. P. and S., 1919	1922	1923
Brownson, Wm. C., Asheville; Univ. of N. Y., 1878	1881	1885
Carroll, Jno. L., Asheville; Louisville Med. Coll., 1905	1905	1905
Chambers, P. P., Asheville; Med. Coll. of S. C., 1907	1922	1923
Cheesborough, Thos. P., Asheville; Univ. of N. Y., 1891	1891	1900
Clark, Harold S., Asheville; Univ. of Pa., 1922	1922	1924
Cocke, C. H., Asheville; Cornell Univ., 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville; Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. Sch., 1895	1909	1912
Cotten, Clyde E., Asheville; Univ. of Wooster, 1889	1901	1901
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Denchfield, A. L., Asheville; Univ. of N. Y., 1905	1914	1916
Dunn, Wm. L., Asheville; Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville; Med. Coll. of S. C., 1906	1907	1909
Edwards, B. O., Asheville; N. C. Med. Coll., 1905	1905	1909
Edwards, C. P., Asheville; Tenn. Med. Coll., 1900	1903	1921
Elias, Lewis W., Asheville; Columbia Univ. Coll. of P. & S., 1903	1906	1907
Flack, Roswell E., Asheville; Johns Hopkins, 1913	1913	1914
Folsom, T. W., Asheville; Univ. of Pa., 1921	1921	1923
Frazer, H. Thompson, Asheville; Columbia Univ. Coll. P. and S., N. Y., 1901	1908	1909
Godwin, G. C., Biltmore; Med. Coll. Va., 1915	1915	1926
Grantham, Wm. L., Asheville; N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; John Hopkins, 1915	1916	1917
Harrison, H. H., Asheville; Jeff. Med. Coll., 1905	1905	1918
Herbert, Wm. P., Asheville; Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville; Univ. of Maryland, 1908	1914	1915

Name and Address	Licensed	Joined State Society
Huffines, T. R., Asheville; Indiana Univ. Med. Sch., 1919	1922	1923
Hunnicutt, Wm. J., Asheville; Univ. of Tenn., 1895	1908	1909
Huston, John Walter, Asheville; Rush Med. Coll., Chicago, 1904	1912	1913
Ivey, R. R., U. S. P. H. S., Biltmore; Univ. of Ala., 1909	1921	1921
Jordan, Charles S., Asheville; Univ. of N. Y., 1890	1891	1899
King, Edward, Asheville; Harvard, 1917	1921	1922
Knoefel, A. E., Black Mountain; Univ. of Louisville, 1893	1914	1916
Lord, Marjery J., Black Mountain; Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville; Univ. of Md., 1904	1912	1913
MacPherson, G. S., Asheville; Medical School of Harvard Univ., 1894	1919	1920
MacRae, J. D., Asheville; Univ. of Nashville, 1897	1899	1920
McCall, A. C., Asheville; Univ. of Md., 1910	1910	1912
McCracken, C. M., Fairview; N. C. Med. Coll., 1896	1896	1904
Malone, J. Y., Asheville; Wash. Univ., 1921	1924	1924
Meriwether, Benj. Morsell, Asheville; U. of Louisville, 1915	1915	1924
Millander, Chas. W., Asheville; Tulane Univ., 1919	1921	1924
Minor, Chas. L., Asheville; Univ. of Va., 1888	1895	1898
Moorer, M. P., Asheville; Med. Coll. of S. C., 1901	1921	1923
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1921
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Orr, P. B., Asheville; Jeff. Med. Coll., 1901	1901	1904
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, Arthur T., Asheville; Jeff. Med. Coll., 1905	1905	1907
Reeves, A. F., Asheville; Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Asheville (Hon.); Univ. of N. Y., 1895	1895	1896
Richardson, F. H., Black Mountain; Cornell Univ., Med. Coll., 1906	1919	1920
Sawyer, James, Asheville; Bellevue Hospital, 1897	1897	1899
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Scruggs, W. H., Asheville; Univ. of Md., 1913	1915	1917
Sevier, D. E., Asheville; Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville; Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville (Hon.); Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., Asheville; N. C. Med. Coll., 1894	1894	1898
Thompson, A. C., Asheville; Georgetown Univ., 1911	1921	1922
Toole, A. F., Asheville; Univ. of Va., 1900	1917	1918
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Weaver, H. B., Asheville (Hon.); Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville; Jeff. Med. Coll., 1898	1897	1915
White, R. A., Asheville; Univ. Cin. Coll. of Med., 1918	1920	1921

Name and Address	Licensed	Joined State Society
Whittington, W. P., Asheville (Hon.); P. and S., Balt., 1882	1882	1882
Willis, A. P., Candler; Univ. of N. C., 1904	1904	1919
Wilson, R. G., Biltmore; Univ. of Pa., 1919	1919	1921
Woodcock, John H., Hendersonville; Hosp. Coll. of Med., Louisville, 1892	1894	1899
Wright, J. B., Black Mountain; Univ. of Ga., 1889	1899	1924
BURKE COUNTY SOCIETY		
President: W. H. Kibler, Morganton; Univ. of Pa., 1914	1914	1918
Secretary: G. M. Billings, Morganton; Tulane Univ. of La., 1919	1919	1920
Gayle, Edward M., Portsmouth, Va.; Univ. of Va., 1902	1902	1902
Griffin, T. A., Wendell; Univ. of Md., 1912	1913	1923
Kirksey, James J., Morganton; Univ. of Pa., 1921	1921	1923
Long, Benj. L., Glen Alpine; N. C. Med. Coll., 1913	1913	1914
Long, R. H., Morganton; Jeff. Med. Coll., 1916	1916	1923
McCampbell, John, Morganton; Balt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton; N. C. Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton; Vanderbilt Univ., 1898	1904	1904
Taylor, E. H. E., Morganton; Tulane Univ. La., 1924	1924	1925
Vann, Elizabeth R., Morganton; Women's Med. Coll. Pa., 1921	1921	1925
Vernon, Jas. W., Morganton; Jeff. Med. Coll., 1909	1909	1913
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907	1907	1910
CABARRUS COUNTY SOCIETY		
President:		
Secretary: J. A. Hartsell, Concord; Jeff. Med. Coll., 1912	1914	1916
Bangle, J. A., Concord; N. C. Med. Coll., 1916	1916	1919
Buchanan, S. E., Concord; N. C. Med. Coll., 1912	1912	1914
Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Concord; Univ. of Md., 1891	1891	1906
Flowe, R. Frank, Kannapolis; N. C. Med. Coll., 1913	1914	1915
Foil, M. A., Mt. Pleasant; Univ. of Md., 1891	1891	1905
Gouger, Geo. J., Concord; Univ. of Md., 1891	1891	1899
King, Richard M., Concord; Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord; Univ. Coll. of Med., Richmond, 1901	1901	1904
Nolan, J. V., Kannapolis; Jeff. Med. Coll., 1921	1921	1922
Patterson, John A., Concord; Univ. Coll. of Med., Richmond, 1911	1911	1912
Pemberton, Wm. D., Concord (Hon.); Univ. of Md., 1887	1887	1887
Rankin, R. B., Kannapolis; Tulane Univ. of La., 1917	1920	1922
Rankin, S. W., Concord; Jeff. Med. Coll., 1912	1912	1914
Reed, John F., Concord; Univ. of N. Y., 1893	1907	1912
Smoot, J. E., Concord; Balt. Med. Coll., 1893	1894	1902

Name and Address	Licensed	Joined State Society
Sossoman, J. C., Midland; N. C. Med. Coll., 1915	1917	1918
Wadsworth, Wm. H., Concord; Jeff. Med. Coll., 1913	1913	1913
Yow, I. A., Georgeville; N. C. Med. Coll., 1906	1906	1910

CALDWELL COUNTY SOCIETY

President:		
Secretary:		
Coffey, Lawrence H., 911 E. Morton St., Lakeland, Fla.; Va. Med. Coll., 1906	1906	1913
Corpening, O. J., Granite Falls; Univ. Coll. of Med., Va., 1906	1906	1907
Goodman, A. B., Lenoir; N. C. Med. Coll., 1898	1897	1910
Hickman, M. T., Hudson; Univ. of Va., 1909	1909	1910
Houck, Albert, Lenoir (Hon.); P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Lenoir; Jeff. Med. Coll., 1885	1885	1900
McNairy, Caroline, Lenoir; Woman's Med. Coll., Pa., 1917	1917	1919
Pitts, W. I., Lenoir; Univ. of the South, Sewanee, 1903	1911	1913
Russell, C. R., Granite Falls; Univ. Coll. of Med., Richmond, 1909	1909	1918
White, W. M., Lenoir; Coll. P. and S., Atlanta, 1899	1899	1905
Wilson, Clarence L., Lenoir; U. S. Grant Univ., 1903	1903	1905

CARTERET COUNTY SOCIETY

President:		
Secretary: Bonner, K. P. B., Morehead City; Med. Coll. of Va., 1905	1905	1905
Ball, M. W., Newport; Atlanta School of Med., 1909	1909	1913
Davis, George, Beaufort; Kentucky School of Med., 1894	1896	1904
Davis, J. J., Atlantic; Univ. of Md., 1891	1891	1916
Ferebee, C. G., Morehead City; Med. Coll. of Va., 1902	1904	1904
Mason, Manly, Beaufort; Tulane Univ., 1924	1924	1925
Maxwell, C. S., Beaufort; Univ. of the South, Sewanee, 1900	1899	1904
Royal, Ben F., Morehead City; Jeff. Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City; Va. Med. Coll., 1913	1915	1922
Whitehurst, E. B., Marshallberg; Med. Coll. of Va., 1915	1917	1920

CASWELL COUNTY SOCIETY

President: S. A. Malloy, Yanceyville; Ky. Sch. of Med., 1897	1898	1903
Secretary: H. L. Gwyn, Yanceyville; Med. Coll. of Va., 1923	1923	1925

CATAWBA COUNTY SOCIETY

President: T. C. Blackburn, Hickory; Balt. Med. Coll., 1896	1896	1909
Secretary: W. G. Bandy, Maiden; Vanderbilt Univ., 1908	1912	1916
Cochrane, J. D., Newton; Univ. of Md., 1912	1912	1923
Flowers, G. E., Hickory; Sou. Med. Coll., Atlanta, 1884	1889*	1904
Foard, F. T., Hickory; Louisville Med. Coll., 1886	1886	1904
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921	1921	1923

*Registered.

Name and Address	Licensed	Joined State Society
Hamrick, F. T., Maiden		
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913	1913	1915
Klutz, A. F., Maiden; Jeff. Med. Coll., 1917	1917	1920
Klutz, P. J., Maiden	1889*	1916
Long, Fred Y., Catawba; Balt. Med. Coll., 1898; N. C. Med. Coll.	1898	1898
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Menzies, H. C., Hickory; N. C. Med. Coll., 1894	1894	1899
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Shuford, Jacob H., Hickory; Univ. of Mich., 1901	1902	1902
Speas, W. P., Hickory; Univ. of Maryland, 1911	1911	1919

CHATHAM COUNTY SOCIETY

President:		
Secretary: J. R. Howard, Bonlee; Med. Coll. of Va., 1924	1924	1925
Byrd, W. C., Morrisville, Rt. 1; Jeff. Med. Coll., 1923	1923	1924
Cathell, J. E., Moncure; Univ. of Md., 1899	1902	1906
Chapin, Wm. Burdette, Pittsboro; Univ. of N. C., 1909	1909	1910
Denson, H. A., Bennett, Central Coll. P. and S., Indianapolis, 1887	1913	1913
Edwards, J. D., Siler City (Hon.); Louisville Med. Coll., 1887		1894
Palmer, R. W., Gulf; Louisville Med. Coll., 1890		1891
Thomas, W. C., Siler City; Va. Med. Coll., 1917	1917	1920
Upchurch, C. G., Apex; Univ. of Md., 1906	1907	1922

CHEROKEE COUNTY SOCIETY

President: B. G. Webb, Andrews; Louisville Med. Coll., 1885	1885	1885
Secretary: Wm. C. Morrow, Andrews; Atlanta School of Med., 1909	1909	1909
Adams, Edw. E., Murphy; Jeff. Med. Coll., 1923	1923	1924
Adams, N. B., Murphy; Tenn. Med. Coll., 1896	1909	1909
Herbert, Fred L., Andrews; Tenn. Med. Coll., 1904	1912	1912
Highway, S. C., Murphy; Med. Coll. of Ohio, 1885	1904	1898
Hill, J. N., Murphy; Univ. of Louisville, 1909	1909	1909
Meroney, B. B., Murphy; Gate City Med. Coll., Texas, 1906	1899*	1909
Tidwell, J. E., Andrews; Chattanooga Med. Coll., 1903	1909	1915
Young, G. McD., Postell; Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTY SOCIETY

President :		
Secretary:		
Cox, Thomas A., Hertford; Univ. of Md., 1885	1907	1918
Dillard, Richard, Jr., Edenton (Hon.); Jeff. Med. Coll., 1879	1880	1880
Smith, Robert W., Hertford; Univ. of Md., 1892	1892	1918
Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1918
Williams, L. P., Edenton; Bellevue Med. Coll., 1918	1919	1921

*Registered.

CLEVELAND COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: J. W. Harbison, Shelby; Johns Hopkins, 1919	1919	1924
Secretary: W. F. Mitchell, Shelby; Univ. of Md., 1889	1900	1904
Aydlette, Jos. P., Earl; Kentucky University, 1901	1903	1903
Ellis, R. C., Shelby (Hon.); Balt. Univ. Med. School, 1886	1889*	1891
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; P. and S., Balt., 1920	1920	1922
Gold, T. B., Lawndale; N. C. Med. Coll., 1911	1911	1915
Hamrick, T. G., Shelby; P. and S., Balt., 1895	1895	1904
Hamrick, J. Y., Jr., Boiling Springs; Columbia Univ., 1915	1916	1917
Houser, E. A., Shelby; Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, F. H., Shelby; Univ. of Md., 1915	1915	1920
Lattimore, E. B., Shelby; Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence V., Lattimore; Emory Univ. School of Med., 1894	1897	1904
McBrayer, R., Shelby; Univ. of Pa., 1916	1916	1917
Oates, George, Grover; Univ. of Louisville, 1894	1902	1904
Royster, S. S., Shelby; Tenn. Med. Coll., 1891	1896	1904
Wood, J. W., Shelby, Rt. 3; Louisville Med. Coll., 1892	1901*	1900

COLUMBUS COUNTY SOCIETY

President: W. F. Smith, Chadbourn; N. C. Med. Coll., 1904	1904	1905
Secretary: Floyd Johnson, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Whiteville; N. C. Med. Coll., 1907	1907	1909
Cox, G. S., Tabor; N. C. Med. Coll., 1911	1911	1914
Crowell, W. H., Whiteville; Univ. of Md., 1895	1895	1908
Floyd, L. D., Cerro Gordo; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton; Va. Med. Coll., 1919	1920	1922
Maxwell, H. B., Whiteville; Univ. of Md., 1902	1902	1902
Moore, T. V., Acme; Balt. Med. Coll., 1901	1901	1911
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915
Whitaker, R. B., Whiteville; Univ. Coll. of Med., Richmond, 1912	1912	1913
Williams, Wm. Norman, Tabor; Med. Coll. of Va., 1924	1924	1925

CRAVEN COUNTY SOCIETY

President: R. Duval Jones, New Bern; Univ. of Md., 1896	1897	1897
Secretary: Barker, Christopher R., New Bern; Jeff. Med. Coll., 1909	1909	1924
Caton, Geo. A., New Bern; Va. Med. Coll., 1898	1898	1904
Daniels, R. L., New Bern; Va. Med. Coll., 1912	1912	1919
Duffy, R. N., New Bern; John Hopkins, 1906	1907	1908
Duffy, Leinster, New Bern; P. and S. Baltimore, 1889	1888	1888
Ford, D. E., New Bern; Univ. of Mich., 1908	1925	1924

*Registered.

Name and Address	Licensed	Joined State Society
Gibbs, N. M., New Bern; Univ. of Md. and Coll. P. and S., Balt., 1896	1895	1897
Hughes, Francis W., New Bern (Hon.); Univ. of Pa., 1880	1885	1885
Latham, Joseph R., New Bern; Jeff. Med. Coll., 1917	1917	1923
Pollock, Raymond, New Bern; Jefferson Med. Coll., 1897	1900	1900
Primrose, R. S., New Bern; Bellevue, 1890	1890	1925
Taylor, H. A., New Bern; Univ. of Ala., 1912	1923	1924
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923
CUMBERLAND COUNTY SOCIETY		
President: W. P. McKay, Fayetteville; Tulane Univ., 1916	1916	1921
Secretary: J. N. Robertson, Fayetteville; Med. Coll. of Va., 1923	1923	1924
Allgood, R. A., Fayetteville; Univ. of Md., and Coll. of P. and S., Balt., 1912	1915	1917
Averitt, K. G., Cedar Creek; Balt. Med. Coll., 1893	1893	1902
Blakey, R. A., Fayetteville; Med. Coll. of Va., 1924	1925	1925
Brenn, Capt. Chas. E., Wadsworth, S. I., N. Y.; Jeff. Med. Coll., 1916; Army Med. School, 1917		1924
Bullock, Thomas C., Autryville; P. and S., Balt., 1885	1885	1905
Chester, P. J., Fayetteville; N. C. Med. Coll., 1913	1913	1920
Coburn, Major H. C., Jr., Fort Bragg; Columbia (Geo. Wash.), 1903		1925
Cook, H. L., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Duggins, Major P. E., Fort Bragg; Univ. of Va., 1913		1924
Gainey, John W., Fayetteville; Jeff. Med. Coll., 1917	1917	1921
Griffis, Maj. Frank C., Fort Bragg; Ohio Med. Univ., 1896		1924
Highsmith, J. D., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville; Univ. Coll. of Med., Richmond, 1901	1901	1902
Jordan, Wm. S., Fayetteville; Univ. of N. C., 1906	1906	1907
Kirksey, W. A., Hope Mills; Washington Univ., 1921	1921	1924
Lilly, James M., Fayetteville; Univ. Coll. of Med., Richmond, 1903	1903	1904
MacKethan, John Alex., Fayetteville; N. C. Med. Coll., 1901	1901	1903
McAndrews, Lt.-Col. P. H., Fort Bragg; Univ. of Pa., 1893		1924
McFadyen, O. L., Fayetteville; N. C. Med. Coll., 1912	1912	1912
McGougan, J. V., Fayetteville; Univ. of Md., Coll. of P. and S., 1893	1893	1909
McNeill, Jas. Wm., Fayetteville (Hon.); Bellevue Med. Coll., 1876	1876	1876
Marshall, Maj. Thos. R., Fort Bragg; Coll. of P. and S., 1893		1924
Olive, P. W., Fayetteville; P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville; Jefferson Med. Coll., 1910	1910	1912
Rainey, W. T., Fayetteville; Univ. Coll. of Med., Richmond, 1913	1913	1916

Name and Address	Licensed	Joined State Society
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921
Von Zelinski, Maj. W. F., Fort Bragg; Bennett Med. Coll., Chicago, 1908		1924
West, T. M., Fayetteville; Univ. of Md., 1908	1910	1910

CURRITUCK COUNTY SOCIETY

President :		
Secretary: S. M. Mann, Moyock, P. and S., Balt., 1895	1895	1904
Cowell, Wm. H., Shawboro; Ky. School of Med., 1893	1909	1911
Griggs, W. T., Poplar Branch; Univ. of Va., 1896	1896	1901
Newbern, J. M., Jarvesburg; Georgetown Univ., 1898	1899	1900

DAVIDSON COUNTY SOCIETY

President: J. E. Hobgood, Thomasville; Jeff. Med. Coll., 1907	1907	1917
Secretary: Grover C. Gambrell, Lexington; Univ. of Ga., 1912	1923	1924
Buchanan, E. J., Lexington; Univ. of Md., 1892	1892	1900
Clodfelter, C. M., Lexington; P. and S., Balt., 1905	1905	1907
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Dowdy, J. E., Thomasville; Univ. of Md., 1909	1909	1924
Hill, David Joseph, Lexington; P. and S., Balt., 1893	1893	1894
Hill, W. Lee, Lexington, Rt. 4; P. and S., Balt., 1893	1893	1904
Hunt, W. Bryce, Lexington; Univ. of Md., 1923	1923	1924
Julian, Chas. A., Thomasville (Hon.); Louisville Med. Coll., 1888	1891	1892
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922	1922	1924
Mock, Frank Lowe, Lexington, Rt. 3; N. C. Med. Coll., 1908	1908	1911
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914	1914	1917
Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Sowers, Jacob L., Lexington; Univ. of Md., 1921	1921	1924
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1912
Vestal, Willis J., Lexington (Hon.); P. and S., Balt., 1883	1889*	1893
Yokeley, R. V., Thomasville; N. C. Med. Coll., 1911	1911	1912
Zimmerman, Robt. U., Lexington, Rt. 4; N. C. Med. Coll., 1901	1901	1904

DAVIE COUNTY SOCIETY

President: W. C. Martin, Mocksville; P. and S., Balt., 1888	1888	1904
Secretary: A. B. Byerly, Cooleemee; Univ. College of Med., Richmond, 1896	1896	1904
Byerly, Wesley Grimes, Cooleemee; Rich. Med., 1924	1924	1925
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Rodwell, Jno. W., Mocksville; P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President: J. W. Carroll, Wallace; Univ. of Md., 1903	1903	1903
Secretary: R. C. Williams, Wallace; Univ. of Md., 1912	1915	1916
Carr, Ransom Lee, Rose Hill; Balt. Med. Coll., 1907	1908	1909

*Registered.

Name and Address	Licensed	Joined State Society
Farrior, J. W., Warsaw; Univ. of Pa., 1912	1913	1917
Kennedy, Geo. W., Beulaville; Univ. Coll. of Med., Richmond, 1898	1897	1909
Landen, J. F., Chinquapin; Univ. Coll. of Med., Richmond, 1905	1905	1907
Maxwell, J. F., Pink Hill	1889*	1917
Morton, J. X., Faison; N. C. Med. Coll., 1915	1915	1922
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912	1913	1916
Reed, D. H., Kenansville; Geo. Washington Univ., 1901	1904	1917
Robinson, J. D., Wallace; Univ. of Md., 1915	1915	1917
Straughan, J. W., Warsaw; Med. Coll. of Va., 1924	1924	1925
Williams, Jas. M., Warsaw; Univ. of Md., 1902	1902	1902
DURHAM-ORANGE COUNTIES SOCIETY		
President: W. M. Coppridge, Durham; Jeff. Med. Coll., 1918	1919	1920
Secretary: G. T. Watkins, Durham; Jeff. Med. Coll., 1915	1915	1917
Abernethy, E. A., Chapel Hill; Univ. Coll. of Med., Richmond, 1901; Geo. Wash. Univ., 1903	1901	1914
Adams, C. A., Durham; P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham; Johns Hopkins, 1907	1915	1916
Baynes, R. H., Durham; Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham; Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham P., Durham (Hon.); P. and S., Balt., 1883	1883	1883
Booker, Lyle S., Durham; Va. Univ. Med. Coll., 1908	1910	1911
Boone, W. H., Durham; N. C. Med. Coll., 1902	1902	1910
Boone, W. W., Durham; Jeff. Med. Coll., 1923	1923	1925
Brinkley, H. M., West Durham; Jefferson Med. Coll., 1919	1919	1923
Brooks, B. U., Durham; Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Campbell, A. S., Durham; Chicago Coll. Med. and Surg., 1917	1923	1924
Carrington, G. L., Durham; Johns Hopkins, 1920	1920	1925
Darden, O. B., Richmond, Va.; Med. Coll. of Va., 1918	1920	1920
Fassett, Burton W., Durham; Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham; Univ. of Md., 1898	1899	1909
Graham, Joseph, Durham; Univ. of Pa., 1901	1902	1906
Hardee, W. P., Durham; Jeff. Med. Coll., 1912	1912	1924
Hayes, R. B., Hillsboro; Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham; Univ. of Md., 1904	1904	1904
Holloway, O. W., Durham; Med. Coll. of Va., 1901	1901	1917
Holloway, Robt. Lee, West Durham; Va. Med. Coll., 1893	1893	1901
Johnson, N. M., Durham (Hon.); Wash. Univ. Sch. of Med., 1877	1889*	1879
Kerns, T. C., Durham; Univ. of Pa., 1911	1911	1912
Lawson, R. B., Chapel Hill; Univ. of Va., 1903	1915	1920
Lloyd, B. B., Chapel Hill; Univ. of N. C., 1909	1909	1914
MacNider, Wm. deB., Chapel Hill; Univ. of N. C., 1903	1903	1903

*Registered.

Name and Address	Licensed	Joined State Society
McCutcheon, W. B., Durham; Med. Coll. of Va., 1921	1921	1924
McPherson, S. D., Durham; Univ. of Md., 1903	1903	1912
Manning, I. H., Chapel Hill; Long Island, N. Y., Coll. Hosp., 1897	1899	1901
Manning, Jno. M., Durham (Hon.); Bellevue Med. Coll., 1882	1884	1884
Markham, Blackwell, Durham; Harvard Med., 1922	1922	1925
Montague, S. J., Durham; Bellevue Hosp. Med. Coll., 1872	1880	1922
Nichols, Rhodes E., Durham, Rt. 8; Med. Coll., Rich., 1890	1890	1904
Patrick, J. E., Bahama; Univ. Coll. of Med., Va., 1900	1900	1917
Purington, H. H., Durham; Bowdoin College, 1891	1914	1925
Ray, Hickman, Durham; Univ. of Md., 1915	1915	1920
Roberson, Foy, Durham; Jeff. Med. Coll., 1909	1909	1912
Roberson, Mike, Durham; Tulane Univ., 1912	1912	1913
Ross, Geo. H., East Durham; Univ. of Tenn., 1899	1899	1904
Schuler, J. E., East Durham; Med. Coll. of Va., 1914	1920	1922
Smith, F. C., Durham; Jeff. Med. Coll., 1921	1921	1925
Speed, J. A., Durham; Jeff. Med. Coll., 1914	1914	1916
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919	1919	1923
Stoner, I. J., West Durham; Memphis Med. Coll., 1898	1921	1922
Sweaney, H. M., Durham; Univ. of Pa., 1919	1919	1920
Sweaney, John, West Durham; P. and S., Balt., 1886	1889*	1916
Waring, E. S., Durham; Harvard, 1918	1922	1923
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925

EDGECOMBE COUNTY SOCIETY

President: Spencer P. Bass, Tarboro; Univ. of Va., 1906	1907	1909
Secretary: John S. Hooker, Tarboro; Emory Univ., 1923	1923	1924
Baker, J. M., Tarboro (Hon.); Univ. of Md., 1879	1879	1879
Green, Wm. W., Tarboro; Univ. of N. C., 1908	1908	1910
Harrell, Samuel N., Tarboro; Univ. of Md., 1897	1897	1904
Lane, M. E., Pinetops; Jeff. Med. Coll., 1921	1921	1922
Norfleet, L. E., Tarboro; Columbia Univ. P. and S., 1889	1890	1920
Raby, J. G., Tarboro; Univ. Coll. of Med., Va., 1911	1911	1912
Royster, Thos. H., Tarboro; Univ. Coll. of Med., 1908	1908	1914
Thigpen, William J., Tarboro; Jeff. Med. Coll., 1900	1900	1901
Wooten, Amos Monroe, Pinetops; Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President: John Robt. Paddison, Kernersville; Univ. of Md., 1902	1902	1913
Secretary: Leroy J. Butler, Winston-Salem; Va. Med. Coll., 1915	1920	1921
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911	1911	1914

*Registered.

Name and Address	Licensed	Joined State Society
Browne, Arthur T., Winston-Salem; Memphis P. & S., 1913	1918	1921
Bynum, John, Winston-Salem (Hon.); Univ. of N. Y., 1892	1892	1893
Carlton, Romulus L., Winston-Salem; Univ. of Md., 1906	1906	1908
Cooke, G. C., Winston-Salem; Univ. of Md., 1919	1919	1920
Craig, S. D., Winston-Salem; Tulane Univ., 1908	1911	1912
Curtis, W. C., Winston-Salem; Med. Coll. of Va., 1920	1924	1925
Dalton, D. N., Winston-Salem (Hon.); Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem; N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y.; Barnes Med. Coll., 1902	1920	1920
Davis, J. M., Winston-Salem; Columbia Univ., 1913	1913	1920
Davis, Thos. W., Winston-Salem; S. C. Med. Coll., 1898	1899	1900
Fearrington, Jos. P., Winston-Salem; Univ. of Md., 1887	1887	1904
Flynt, S. S., Rural Hall; P. and S., Balt., 1889	1890	1907
Gray, Eugene Price, Winston-Salem; Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Hammock, J. C., Walkertown; P. and S., Balt., 1895	1895	1908
Hanes, F. M., Winston-Salem; Johns Hopkins, 1908	1916	1917
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916	1916	1917
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1916
Izlar, H. L., Winston-Salem; Med. Coll. of the State of S. C., 1915	1916	1916
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverley N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll. of Va., 1923	1923	1925
Kapp, Henry H., Winston-Salem; Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., Richmond, 1911	1911	1914
Kerr, Jas. Edwin, Winston-Salem; Univ. of Md., 1897	1898	1898
Lawrence, Chas. S., Winston-Salem; Univ. of Ga., 1908	1908	1911
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem; Univ. of Pa., 1902	1904	1904
Long, Vann McKee, Winston-Salem; N. C. Med. Coll., 1906	1906	1911
Lott, H. S., Winston-Salem; Univ. of Ga., 1884	1888	1887
Mimms, C. W., Winston-Salem; Univ. of Louisville, 1914	1916	1917
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Va. Med. Coll., 1911	1914	1916
Pepper, John Kerr, Winston-Salem; P. and S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem; Va. Med. Coll., 1904	1910	1917
Pfohl, Samuel F., Winston-Salem; Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923	1924	1925
Redfern, T. C., Winston-Salem; L. I. Med. Coll. Hosp., 1916	1921	1921
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918	1920	1920
Salmons, L. R., Winston-Salem; N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem; Univ. of Ill., 1904	1911	1912
Schaub, O. P., Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Simmons, R. R., Winston-Salem; Va. Med. Coll., 1917	1923	1924

Name and Address	Licensed	Joined State Society
Slate, John S., Winston-Salem; Univ. Coll. of Med., Va., 1900	1899	1920
Spainhour, Ellis H., Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem, R. F. D.; Univ. of Md., 1911	1913	1924
Spencer, Wm. O., Winston-Salem (Hon.); Jeff. Med. Coll., 1891	1891	1894
Spicer, R. W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1925
Sprunt, W. H., Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Street, C. A., Winston-Salem; Harvard Med. School, 1918	1918	1925
Strickland, Edward F., Winston-Salem (Hon.); Univ. of New York, 1887	1887	1893
Summers, Chas. L., Baltimore, Md. (Hon.); Univ. and P. and S., Md., 1887	1892	1896
Thompson, Edg. S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913	1913	1916
FRANKLIN COUNTY SOCIETY		
President: Harry H. Johnson, Louisburg; P. & S., Balt., 1915	1919	1919
Secretary: S. P. Burt, Louisburg; P. & S., Balt., 1896	1896	1904
Harris, John H., Franklinton; Bellevue, 1886	1886	1904
Henderson, R. B., Franklinton; Univ. of Md., 1884	1884	1904
Johnson, B. C., Bunn; Univ. of N. C., 1909	1909	1910
Malone, James E., Louisburg; Bellevue, 1875		1904
Newell, J. O., Louisburg; P. and S., Balt., 1910	1910	1912
Perry, A. H., Wood; Univ. of Md., P. & S., Balt., 1924	1924	1925
Perry, H. G., Louisburg; P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville; Jefferson Med. Coll., 1915	1915	1922
Timberlake, Richard E., Youngsville; Jefferson, 1908	1908	1910
Yarborough, R. F., Louisburg; Geo. Wash. Univ., 1898	1899	1899
GASTON COUNTY SOCIETY		
President: C. R. McAdams, Belmont; N. C. Med. Coll., 1912	1912	1916
Secretary: J. Sidney Hood, Kings Mountain; Jeff. Med. Coll., 1907	1907	1910
Adams, Charles E., Gastonia; Univ. of Md., 1897	1885	1904
Anders, McT. G., Gastonia; Md. Med. Coll., 1901	1902	1902
Anderson, Jas. A., Gastonia; Univ. of Ga., 1904	1909	1909
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911	1911	1911
Belk, Geo. W., Gastonia; Atlanta School Med., 1913	1918	1924
Blair, J. L., Gastonia; Atlanta Med., 1915	1920	1921
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1919	1920
Clinton, Roland S., Gastonia; Univ. of Md., 1914	1914	1920
DeLaney, Chas. O., Gastonia; Jeff. Med. Coll., 1919	1919	1922

Name and Address	Licensed	Joined State Society
Eddleman, Hall M., Gastonia; Coll. of Phys. and Surgs., Balt., 1886	1889*	1904
Farrar, M. R., Gastonia; Univ. of N. C., 1905	1905	1905
Garrison, D. A., Gastonia; Louisville Med. Coll., 1896	1896	1900
Glenn, Henry F., Gastonia; P. & S., Atlanta, 1900	1900	1904
Glenn, Lucius N., Gastonia; Univ. of Md., 1897	1897	1904
Groves, R. B., Lowell; Med. Coll. of Va., 1924	1924	1924
Houser, W. H., Cherryville; N. C. Med. Coll., 1900	1900	1904
Hunter, W. B., Gastonia; Univ. of Pa., 1911	1911	1920
Johnson, R. Lee, Gastonia; Jefferson, 1911	1911	1918
Lyday, C. E., Gastonia; Atlanta S. of Med., 1910	1910	1920
McCombs, C. J., Gastonia; N. C. Med. Coll., 1905	1905	1908
Miller, Oscar L., Gastonia; Atlanta Coll. of P. and S., 1912	1921	1922
Miller, R. C., Cramerton; N. C. Med. Coll., 1909	1918	1919
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Moore, R. A., Gastonia; Univ. of Pa., 1923	1924	1925
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909	1910	1913
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Pugh, Charles H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia; Tulane Univ., 1900	1899	1904
Reid, James W., Lowell; Jefferson, 1908	1908	1910
Rhyne, Robert Edgar, Gastonia; N. C. Med. Coll., 1907	1907	1908
Rudisill, J. D., Cherryville; Univ. of Md., 1922	1922	1923
Sanders, F. H., Cramerton; Atlanta Med., 1915	1923	1923
Sloan, James M., Gastonia; Louisville Med. Coll., 1891	1891	1904
Swann, Jos. F., Gastonia; P. and S., Balt., 1896	1896	1905
Taylor, B. C., Mount Holly; N. C. Med. Coll., 1910	1911	1923
Wilkins, Samuel A., Dallas; Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

President:		
Secretary:		
Blanchard, T. W., Hobbsville; Va. Med. Coll., 1911	1911	1919

GRANVILLE COUNTY SOCIETY

President: Sam H., Cannady, Oxford; Univ. of Va., 1887	1889	1904
Secretary: Joseph A. Morris, Oxford; Vanderbilt Univ., 1890	1893	1899
Bullock, J. H., Washington, D. C.; Med. Coll. of Va., 1915	1915	1922
Bullock, W. B., Oxford; Bellevue Med. Coll., 1892	1892	1893
Daniel, N. C., Oxford; N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem; P. and S., Balt., 1885	1885	1906
Hays, B. K., U. S. Veterans Hosp., Fort Lyon, Colo.; Univ. Coll. of Med., Va., 1894	1894	1897
Noblin, Roy L., Stovall; Med. Coll. of Va., 1924	1924	1924
Sikes, G. T., Creedmoor (Hon.); Univ. of Md., 1883	1884	1884

*Registered.

Name and Address	Licensed	Joined State Society
Taylor, Wm. L., Oxford; Univ. of Va., Charlottesville, 1900	1901	1901
Thomas, Wm. N., Oxford; Va. Med. Coll., 1911	1911	1914
Thompson, Joseph W., Creedmoor; Univ. of Ky., 1904	1907	1912
Watkins, Geo. S., Oxford; Univ. Coll. of Med., 1900	1900	1908
GREENE COUNTY SOCIETY		
President: G. C. Edwards, Hookerton (Hon.); Bellevue Med. Coll., 1883	1883	1883
Secretary: W. E. Dawson, Hookerton; Jefferson, 1920	1920	1922
Harper, J. H. Snow Hill; Jefferson, 1905	1906	1907
Murphy, W. B., Snow Hill; Univ. Coll. of Med., Va., 1903	1903	1905
Whittington, Wm. W., Snow Hill; Louisville Med. Coll., 1895	1895	1902
GUILFORD COUNTY SOCIETY		
President: W. J. Meadows, Greensboro; Med. Coll. of Ala., 1894	1899	1904
Secretary: Harry L. Brockman, High Point; Univ. of Pa., 1917	1917	1921
Ashworth, W. C., Greensboro; P. and S., Balto., 1892	1892	1904
Austin, J. W., High Point; Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlett, H. T., Greensboro; Univ. of Va., 1894	1895	1907
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Banner, Chas. W., Greensboro; Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.); P. & S., Balt., 1884	1884	1890
Beall, Wm. P., Greensboro (Hon.); Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro; Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro; Coll. of P. and S., Balto., 1884	1884	1920
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1921
Bowman, H. P., Greensboro; Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro; P. and S., Balto., 1903	1903	1904
Braddy, Wade Hampton, Greensboro; Univ. of N. C., 1909	1909	1913
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914	1914	1920
Burress, D. A., High Point; Louisville & Hosp. Med. Coll., 1908	1922	1924
Burrus, John T., High Point; Univ. of Md., 1900; Grant Univ., 1902	1898	1898
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Coe, Samuel S., High Point; Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Crews, N. H., Greensboro; Jeff. Med. Coll., 1914	1914	1916
Davis, W. C., Summerfield; Univ. of Md., 1896	1899*	1904
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro; Univ. of Md., 1906	1907	1908
Dick, Julius Vance, Gibsonville; Univ. of N. C., 1907	1907	1908
Dodson, H. H., Greensboro (Hon.); Med. Coll. of Va., 1882	1885	1887
Dyer, John, High Point; Univ. of Louisville, 1916	1921	1925

*Registered.

Name and Address	Licensed	Joined State Society
Flagge, Phillip W., Jamestown; Wash. Univ., St. Louis, 1902	1905	1919
Fortune, Alex. F., Greensboro; Univ. Coll. of Med., Va., 1900	1900	1904
Fox, M. F., Guilford College (Hon.); P. and S., Balto., 1881	1885	1885
Gaw, Lois B., Greensboro; Woman's Med. Coll., Balt., 1907	1907	1924
Gilmer, Charles S., Greensboro, Rt. 6 (Hon.); Univ. of N. Y., 1891	1891	1894
Glascock, J. H., Greensboro; Women's Med. Coll. of Balt., 1896	1896	1907
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of the New York Infirmary, 1892	1894	1896
Graham, J. A., Kansas City, Mo.; Chicago Coll. of Med. and Surg., 1915	1921	1923
Grayson, C. S., High Point; Geo. Wash. Univ., 1906	1907	1908
Groome, J. G., High Point; Univ. of Ohio, 1924	1924	1925
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrison, Edmund, Greensboro; Univ. Coll. of Med., 1896	1900	1900
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Herring, R. A., Greensboro; Tulane, 1905	1923	1924
Hiatt, H. B., High Point; Univ. of Md., 1907	1907	1910
Holden, E. C., High Point; Long Island Coll. Hosp., 1911	1920	1924
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Holt, Wm. T., McLeansville; Univ. of Tenn., 1890		1896
Hudson, C. C., Greensboro; Univ. Coll. of Med. of Va., 1910	1918	1924
Hyatt, Fred C., Greensboro; Jeff. Med. Coll., Phila., 1907	1907	1912
Jackson, Walter Leo, High Point; N. C. Med. Coll., 1911	1911	1913
Jarboe, Parron, Greensboro; Georgetown Univ., 1905	1906	1907
Jones, Arthur O., Greensboro; Bellevue, 1890	1890	1904
Jones, Wm. M., Greensboro; Univ. of Md., 1903	1903	1903
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Knight, Wm. P., Greensboro; Balto. Med. Coll., 1898	1898	1898
Lewis, S. V., Greensboro; Med. Coll. of Va., 1916	1916	1923
Locke, Eva M., Greensboro; Univ. of Mich., 1900	1921	1922
Long, John Wesley, Greensboro (Hon.); Vanderbilt Univ., 1883; Univ. of Nashville, 1884	1884	1884
Lyon, B. R., Greensboro; Columbia Univ., N. Y., 1915	1920	1920
McAnally, Wm. J., High Point; Balto. Med. Coll., 1897	1896	1899
McCain, Wm. R., High Point; Univ. of Md., 1897	1898	1898
McManus, W. L., Greensboro; Atlanta School of Med., 1906	1912	1913
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912	1912	1915
Michaux, Edward R., Greensboro; Univ. of N. Y., 1889	1889	1904
Miles, May S., Greensboro; Laura Mem. Women's Coll. of Med., Cincinnati, Ohio, 1898	1904	1905
Moore, Charles E., Greensboro; Jeff. Med. Coll., 1907	1907	1910
Moore, W. B., Lawsonville; P. and S., Balto., 1893	1893	1904
Moseley, Charles W., Greensboro; Balto. Med. Coll., 1893	1893	1896
Ogburn, H. H., Greensboro; Johns Hopkins Univ., 1913	1913	1914
Parker, H. R., Greensboro; Univ. of Syracuse, 1923	1924	1925

Name and Address	Licensed	Joined State Society
Pate, F. J., Greensboro; Univ. of Md., and P. and S., Balto., 1908	1908	1915
Perry, Robt. E., Greensboro; Univ. of Pa., 1921	1921	1925
Reaves, C. R., Greensboro; Univ. of the South, 1906	1913	1913
Reaves, W. P., Greensboro; Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point; P. and S., Atlanta, 1902	1902	1902
Roberson, Charles, Greensboro; Long Island Coll. Hosp., 1897	1897	1901
Roberson, Geo. B., Greensboro; Med. Coll. of S. C., 1915	1915	1917
Schoonover, R. A., Greensboro; Baltimore Med. Coll., 1905	1912	1912
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Sharpe, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Shohan, Joseph, Greensboro; Coll. P. and S., Balto., 1901	1914	1924
Simmons, L. L., Greensboro; Univ. Tenn., 1893; Vanderbilt Univ., 1899	1918	1919
Sisk, C. N., Greensboro; Univ. of Nashville, 1905	1922	1923
Slate, J. W., High Point; Univ. Coll. of Med., Rich., 1900	1899	1925
Smith, Owen, High Point; Jeff. Med. Coll. of Phila., 1904	1905	1917
Spoon, A. O., Greensboro; Univ. of N. C., 1908	1908	1910
Spruill, Jos. L., Jamestown; Univ. of Md., 1895	1895	1907
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Stanton, T. M., High Point; Med. Coll. of Va., 1916	1916	1917
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916	1916	1917
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906	1906	1907
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, S. R., Greensboro; Univ. of Pa., 1921	1921	1924
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point; Univ. of Tenn., 1901	1901	1904
Turner, J. P., Greensboro; Univ. of Md., 1896	1897	1904
Walker, J. B., Gibsonville; Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian; Univ. of Tenn., 1903	1903	1908
Wilkerson, C. E., Randleman; Univ. of Nashville, Tenn., Med. Dept., 1907	1908	1909
Williams, B. B., Greensboro; Univ. of Md., 1883	1887	1893
Williams, John D., Guilford Station; Vanderbilt Univ., 1898	1898	1898
Wilson, Albert R., Greensboro (Hon.); Jeff. Med. Coll., Phila., 1882	1882	1882
Wilson, N. C., Greensboro; N. C. Med. Coll., 1914		1914
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Woodruff, Fred G., High Point; Med. Coll. of Va., 1917	1917	1919
Wyatt, H. L., Greensboro; Med. Coll. of Va., 1916	1924	1925
York, Alexander A., High Point; Chattanooga Med. Coll., 1907	1907	1909

HALIFAX COUNTY SOCIETY

President: T. W. M. Long, Roanoke Rapids, Univ. Coll. of Med., Va., 1908	1909	1900
Secretary: E. W. Larkin, Weldon; N. C. Med. Coll., 1917	1920	1922

Name and Address	Licensed	Joined State Society
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Fleming, W. L., Enfield; Univ. of N. C., 1910	1910	1916
Furgerson, Henry B., Halifax; Jeff. Med. Coll., 1882		1904
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., Va., 1911	1914	1916
Justice, L. H., Littleton; Med Coll. of Va., 1916	1920	1920
Lassiter, H. G., Weldon; Jeff. Med Coll., 1918	1918	1920
Leggett, Kenelm, Hobgood (Hon.); Ky. School of Med., 1884	1885	1885
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920
Nicholson, B. M., Enfield; Va. Univ. Coll. of Med., 1910	1910	1913
Palmer, Horace, Hollister; Atlanta School of Med., 1912	1912	1920
Pierce, S. B., Weldon; Bellevue Hosp., 1897	1897	1906
Putney, W. R., Littleton; Univ. Coll. of Med., Richmond, 1912	1919	1920
Smith, O. F., Scotland Neck; Univ. Coll. of Med., Va., 1899	1899	1904
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917	1917	1920
Weathers, Bahnson, Roanoke Rapids; Wash. Univ. Med. School, St. Louis, 1917	1921	1922
Whitaker, F. C., Enfield; Maryland Med. Coll., 1911	1911	1919
Zollicoffer, D. B., Weldon; P. and S., Baltimore, 1881	1886	1904
HARNETT COUNTY SOCIETY		
President:		
Secretary: H. C. Turlington, Dunn; Univ. Coll. of Med., Va., 1913	1913	1914
Barefoot, M. L., R. F. D. 6, Dunn; Univ. of Md., 1911	1911	1912
Coltrane, Wallace E., Dunn; Med. Coll. of Va., 1912	1913	1917
Halford, Jos. W., Lillington; Geo. Washington Univ., 1904	1905	1905
Hicks, Isham Faison, Dunn; N. C. Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn; Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Duke; Jeff. Med. Coll., Phila., 1895	1895	1901
McKay, Joseph F., Buies Creek; S. C. Med. Coll., 1884	1885	1904
McLean, John W., Godwin; N. C. Med. Coll., 1902	1902	1906
Melvin, Wayman C., Linden; Univ. Coll. of Med., Richmond, 1900	1900	1905
Phillips, J. W., Lillington; Geo. Washington Univ., 1921	1922	1923
Sexton, C. Hector, Dunn; Univ. of Md., 1890	1890	1904
Warren, R. L., Dunn; Tulane Univ., 1911	1911	1912
HAYWOOD COUNTY SOCIETY		
President: T. F. Reynolds, Canton; N. C. Med. Coll., 1904	1904	1920
Secretary: J. R. McCracken, Waynesville; N. C. Med. Coll., 1902	1902	1903
Abel, J. F., Waynesville; Univ. of Balt., 1892	1893	1899
Allen, Rufus L., Waynesville; Univ. of Md., 1885	1885	1889
Davis, F. M., Canton; Vanderbilt Univ., 1894	1894	1904
Francis, Wm. G., Waynesville; Jeff. Med. Coll., 1915	1916	1925
Johnson, W. C., Canton; Tulane Univ. of La., 1912	1912	1917

Name and Address	Licensed	Joined State Society
Kirkpatrick, W. L., Waynesville; Vanderbilt Univ., 1894	1894	1905
Montgomery, K. E., Waynesville; Univ. of Louisville, 1917	1920	1920
Russell, Jesse M., Canton; Univ. of Nashville, 1911	1911	1912
Stringfellow, Jas. L., Sunburst; Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Waynesville; Jeff. Med. Coll., Phila., 1905	1905	1907
Stringfield, Thomas, Waynesville; Vanderbilt Univ., 1898	1898	1899
Way, J. Howell, Waynesville (Hon.); Vanderbilt Univ., 1886	1885	1887

HENDERSON-POLK COUNTIES SOCIETY

President: E. P. Mallett, Hendersonville; L. I. Coll. Hosp., Brooklyn, 1889	1914	1914
Secretary: R. C. Sample, Hendersonville; Univ. of Pa., 1915	1915	1919
Brackett, W. E., Hendersonville; Jeff. Med. Coll., 1915	1915	1924
Brown, J. S., Hendersonville (Hon.); Northwestern Univ., 1893	1894	1895
Cliff, B. F., Hendersonville; Geo. Washington Univ., 1908	1909	1915
Dixon, Guy E., Hendersonville; P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville; Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville (Hon.); Univ. of Md., 1877	1889*	1890
Grady, Wm. Earle, Tryon; Univ. of Md. and P. and S., Balt., 1894	1895	1899
Howe, Wm. B. White, Jr., Hendersonville; Med. Coll. of S. C., 1906	1907	1908
Kirk, W. R., Hendersonville; Central Univ., Louisville, 1891	1901	1903
Salley, E. McQueen, Saluda; Univ. of Md., 1905	1905	1908
Summer, Thos. W., Fletcher; Jeff. Med. Coll., 1910	1910	1911

HERTFORD COUNTY SOCIETY

President: R. H. Gary, Murfreesboro; Coll. of Phy, and Surg., Baltimore, 1881	1889*	1904
Secretary: W. B. Pollard, Winton; Univ. of Pa., 1899	1903	1905
Burbage, Thomas I., Como; Memphis Hosp. Med. Coll., 1883	1889*	1890
Futrell, L. M., Murfreesboro; Va. Med. Coll., 1914	1914	1918
Harrell, Geo. N., Murfreesboro; Univ. Coll. of Med., Richmond, 1907	1907	1909
Mitchell, Jesse H., Ahoskie; Coll. of P. and S., Balt., 1879	1889*	1904
Mitchell, Paul H., Ahoskie; Univ. Coll. of Med., Rich., 1907	1907	1908
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: P. P. McCain, Sanatorium; Univ. of Md. and Coll. P. and S., 1911	1914	1917
Secretary: L. B. McBrayer, Southern Pines; Louisville Med. Coll., 1889	1891	1900
Bittinger, S. M., Sanatorium; Geo. Washington Univ., 1918	1924	1924

*Registered.

Name and Address	Licensed	Joined State Society
Brown, G. W., Raeford; Ky. School Med., Louisville, 1898	1900	1900
Geddie, K. B., Raeford; Jeff. Med. Coll., 1921	1921	1923
Lee, S. E., Sanatorium; Univ. of Md., 1911	1924	1924
Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Perry, D. R., Southern Pines; Jeff. Med. Coll., 1919	1919	1922
Wilkins, R. B., Raeford; N. C. Med Coll., 1913	1913	1915
Williams, J. H., Sanatorium; Jeff. Med. Coll., 1920	1920	1922
Yoder, Paul A., Sanatorium; Univ. of Pa., 1923	1923	1925

HYDE COUNTY SOCIETY

President:		
Secretary:		
Harris, Arthur Graham, Fairfield; Univ. of the South, 1905	1907	1908

IREDELL-ALEXANDER COUNTIES SOCIETY

President: T. V. Goode, Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Secretary: J. E. McLaughlin, Statesville (Hon.); Univ. of Md., 1886	1886	1896
Adams, M. R., Statesville (Hon.); Univ. of Md., 1878	1884	1884
Anderson, Thos. Eli, Statesville (Hon.); Jeff. Med. Coll., Phila., 1878	1879	1879
Bell, A. E., Mooresville; Univ. of Md. and Coll. of P. and S., 1897	1897	1904
Brandon, W. D. R., Statesville; Univ. of Md., 1914	1914	1916
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909, and Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville; N. C. Med. Coll., Charlotte, 1907; Jeff. Med. Coll., Phila., 1908	1907	1913
Gilmore, W. D., Box 1194, Indianapolis, Ind.; Univ. of N. C., 1903	1903	1904
Hart, V. K., Statesville; Univ. of Pa., 1921	1924	1925
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923	1923	1925
Hubbard, Fred C., N. Wilkesboro; Jeff. Med. Coll., 1918	1919	1921
Jurney, Peter Claywell, Turnersburg; Med. Coll. of Va., 1901	1901	1904
Lackey, M. A., Mooresville; N. C. Med. Coll., 1917	1923	1924
Little, E. E., Statesville; N. C. Med. Coll., 1912	1912	1915
Long, H. F., Statesville (Hon.); Balt. Med. Coll., 1891	1892	1893
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
Poston, J. Lewis, Statesville; Jeff. Med. Coll., 1922	1923	1924
Sharpe, Frank L., Statesville; Univ. of N. C., 1904	1904	1905
Sherrill, C. L., Statesville; N. C. Med. Coll., 1914	1914	1915
Tally, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Tatum, Roy C., Statesville; Jeff. Med., 1919	1919	1920
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914
Trivette, W. A., Hamptonville; Med. Coll. of Va., 1916	1916	1925
Wilson, W. E., Mooresville; Louisville Med. Coll., 1886	1886	1920

JACKSON COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: Chas. Z. Candler, Sylva; P. and S., Atlanta, 1901	1901	1904
Secretary: D. D. Hooper, Sylva; Univ. Coll of Med., Va., 1905	1905	1905
Harrington, Carey L., East Laporte; Univ. of Pa., 1922	1924	1924
Nichols, Alvin A., Sylva; Univ. of Nashville Med. Dept., 1898	1904	1904
Nichols, Asbury S., Sylva; Tennessee Med. Coll., 1906	1907	1913
Van Epp, Owen B., East Laporte; Cleveland-Pulte Med. Coll., 1900	1923	1923
Wilkes, Grover C., Sylva; N. C. Med. Coll., Charlotte, 1916	1916	1920

JOHNSON COUNTY SOCIETY

President: L. D. Wharton, Smithfield (Hon.); Tulane Univ., 1893	1893	1894
Secretary: C. C. Massey, Smithfield; Jeff. Med. Coll., 1923	1923	1925
Coleman, G. S., Kenly; Med. Coll. of Va., 1907	1907	1909
Grady, Jas. C., Kenly; Balt. Univ. School of Med., 1887	1887	1890
Griffin, J. A., Clayton (Hon.); P. and S., Baltimore, 1881	1889*	1890
Hinnant, Milford, Micro; Univ. of Md., 1912	1912	1913
Hocutt, Battle A., Clayton; Univ. of N. C. School of Med, 1906	1906	1908
Hooks, Thel., Smithfield; Med. Coll. of Va., 1901	1901	1903
Lee, S. J. P., Benson; Maryland Med. Coll., 1904	1904	1922
McLemore, George A., R. F. D., Clayton; Univ. of N. C., 1906	1906	1908
Martin, J. F., Benson; N. C. Med. Coll., 1905	1905	1918
Mayerberg, I. W., Selma; Jeff. Med. Coll., 1907	1907	1909
Noble, R. J., Selma (Hon.); Ky. Med. School, 1875	1878	1878
Oliver, A. S., Benson; Jeff. Med. Coll., 1914	1914	1919
Orr, W. J. B., Smithfield; Univ. of Md., 1920	1920	1922
Parker, G. E., Benson; Coll. of P. and S., Balt., 1886	1889*	1904
Person, J. B., Selma; Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield; Jeff. Med. Coll., 1906	1906	1907
Stanley, John H., Four Oakes; Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton; Univ. of N. C., 1905	1905	1907
Utley, H. H., Benson; Balt. Med. Coll., 1906	1906	1901
Vick, Geo. D., Selma; Jeff. Med. Coll., 1906	1906	1907
Woodard, G. B., Kenly; Med. Coll. of Va., 1915	1915	1916
Young, J. J., Clayton; P. and S., Balt., 1897	1896	1904

JONES COUNTY SOCIETY

President: A. F. Hammond, Pollockville; Univ. Coll. of Med., Va., 1903	1903	1914
Secretary: B. W. Page, Maysville; Tulane Univ., 1909	1909	1919
Bell, J. C., Maysville; P. and S., Balt., 1910	1915	1922
Bender, E. L., Trenton; Med. Coll. of Va., 1916	1916	1925

LEE COUNTY SOCIETY

President: Roy G. Sowers, Jonesboro; Univ. of Md., 1923	1923	1924
Secretary: Lynn McIver, Sanford; Kentucky Univ., 1901	1902	1902

*Registered.

Name and Address	Licensed	Joined State Society
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919
Lutterloh, I. H., Sanford; Vanderbilt Univ., 1890	1894*	1922
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921	1921	1922
McColgan, J. W., Sanford; Univ. Manitoba, 1910		1925
Mathews, M. L., Sanford; Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford; P. and S., Balt., 1901	1901	1905
Monroe, W. A., Sanford (Hon.); Univ. of Md., 1886	1886	1890
Scott, Charles L., Sanford; Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro (Hon.); Vanderbilt Univ., 1890	1889*	1890
Stockton, W. I., Carthage, R. F. D.; P. and S., Univ. of Md., 1915	1915	1925
Watson, Leon, Broadway; N. C. Med. Coll., 1900	1900	1904
LENOIR COUNTY SOCIETY		
President: Vance P. Peery, Kinston; Med. Coll. of Va., 1916	1917	1917
Secretary: Paul F. Whitaker, Kinston; Med. Coll. of Va., 1922	1922	1924
Carr, M. L., La Grange; Med. Coll. of Va., 1916	1916	1920
Hardy, Ira M., Kinston; Med. Coll. of Va., 1901	1902	1902
Hyatt, A. L., Kinston; Univ. of Md., 1910	1910	1921
McGeachy, R. S., Kinston (Hon.); Bellevue Hosp., 1894	1894	1895
McNairy, C. Banks, Kinston; P. and S., Balt., 1893	1893	1905
Mangum, C. P., Kinston; Jeff. Med. Coll., 1918	1918	1920
Parrott, Albert DeK., Kinston; Univ. Coll. of Med., Va., 1906	1906	1908
Parrott, James M., Kinston (Hon.); Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston; Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston; Tulane Univ., 1899	1899	1901
Tull, Henry, Kinston (Hon.); Univ. of Pa., 1876	1876	1876
West, C. F., Kinston; Univ. of Pa., 1917	1917	1920
Weyher, V. E., Kinston; Univ. Vienna, Austria, 1869	1889*	1919
Whitaker, Frederick A., Kinston; Univ. of Pa., 1875	1889*	1884
Whitaker, Frederick S., Kinston; Balt. Med. Coll., 1913	1913	1914
Wooten, Floyd P., Kinston; Jeff. Med., 1920	1920	1923
LINCOLN COUNTY SOCIETY		
President: B. M. Bradford, Lincolnton; N. C. Med. Coll., 1915	1913	1923
Secretary: G. B. Crowell, Lincolnton; Univ. of Pa., 1922	1922	1923
Crowell, L. A., Lincolnton; Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Belwood; Atlanta Med., 1914	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916	1916	1917
Gamble, J. F., Lincolnton; Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton; Univ. of Tennessee, 1911	1911	1912
Hoover, C. H., Denver; Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Kiser, W. C., Reepsville; Southern Med. Coll., of Ga., 1889	1893*	1904
Lee, R. E., Lincolnton; Univ. of Md., 1896	1896	1918
Shellum, O. W., Lowesville; N. C. Med. Coll., 1909	1909	1913

*Registered.

McDOWELL COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: R. B. Butt, Marion; Emory Univ., Atlanta, 1920	1920	1921
Secretary: J. F. Miller, Marion; Med. Chi. Phila., 1906	1915	1919
Ashworth, B. L., Marion; P. and S., Balt., 1892	1893	1900
Johnson, John B., Old Fort; Univ. Louisville Med., Dept., 1905	1914	1914
Jonas, John F., Marion; Balt. Med. Coll., 1903	1903	1903
Justice, Gaston B., Marion; P. and S., Atlanta, 1907	1907	1907
Kirby, Guy S., Marion; Univ. Coll. of Med., Va., 1897	1896	1903
McIntosh, D. M., Old Fort; Med. Coll. of Va., 1904	1907	1909

MACON-CLAY COUNTIES SOCIETY

President: S. H. Lyle, Franklin; Univ. of Nashville, 1883	1881	1882
Secretary: W. A. Rogers, Franklin; Univ. of Nashville, 1898	1898	1898
Angel, F., Franklin; Jeff. Med. Coll., 1918	1923	1924
Fouts, J. H., Franklin; Vanderbilt Univ., 1895	1895	1918
Killian, P. B., Hayesville; Atlanta Coll. of P. and S., 1900	1909	1909
Lapham, Mary E., Highlands; Woman's Med. Coll. of Pa., 1900	1906	1906

MADISON COUNTY SOCIETY

President: Frank Roberts, Marshall; Jeff. Med. Coll., 1892	1892	1902
Secretary: Jos. N. Moore, Marshall; Univ. of N. C., 1905	1905	1909
Andrews, John H., White Rock; Harvard Med. Coll., 1902	1922	1923
Baird, John W., Mars Hill; Tenn. Med. Coll., Knoxville, 1901	1908	1909
Burnett, Isaac E., Mars Hill; Tenn. Med. Coll., Knoxville, 1901	1905	1904
English, I. L., Faust	1898*	1904
Packard, G. H., Meredith, N. H., Rt. 1; P. & S., Balt., 1898	1914	1915
Peck, Edward J., Hot Springs; Vanderbilt Univ., 1879; Univ. of Nashville, 1880	1893*	1903
Robinson, Willard F., Mars Hill; Vanderbilt Univ., 1896	1903	1904
Sams, W. A., Marshall; Lincoln Mem., 1911	1919	1920
Tilson, Jacob Carson, Marshall; Lincoln Mem. Univ., 1892	1885	1904

MARTIN COUNTY SOCIETY

President: Jesse E. Ward, Robersonville; Univ. of Md., 1904	1904	1905
Secretary: Wm. E. Warren, Williamston; Nongrad., Univ., N. Y.	1893	1894
Long, Benj. L., Hamilton (Hon.); Univ. of Md., 1881	1883	1885
Long, Edgar M., Hamilton; Univ. of Md., 1909	1909	1910
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890	1890	1893
Rhodes, James S., Williamston; Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston; Univ. Coll. of Med., Va., 1905	1905	1909
Smithwick, James E., Jamesville; Univ. Coll. of Med., 1897	1897	1904
Ward, Vernon Albert, Robersonville; Jeff. Med. Coll., 1908	1908	1914
York, Hugh B., Williamston; P. and S., Balt., 1906	1906	1907

*Registered.

MECKLENBURG COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: Parks M. King, Charlotte; Bellevue Med. Coll., 1902	1902	1904
Secretary: John P. Kennedy, Charlotte; Jeff. Med Coll., 1915	1915	1920
Abernathy, H. N., Charlotte; Louisville Med. Coll., 1894	1894	1899
Alexander, Annie L., Charlotte (Hon.); Women's Med. Coll., Pa., 1884	1885	1885
Alexander, James R., Charlotte; Univ. of Md., 1894	1894	1899
Alexander, M. Janet, Montgomery, India; Women's Med. Coll., Pa., 1917	1917	1918
Allan, William, Charlotte; P. and S., Balt., 1906	1906	1914
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917	1917	1918
Austin, Frederick De Costa, Charlotte; N. C. Med. Coll., 1907	1907	1908
Barret, H. P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1910
Battle, S. W., Charlotte (Hon.); Bellevue Med. Coll., N. Y., 1875	1889*	1887
Black, Geo. Wm., Pineville; Med. Coll. of Va., 1924	1924	1925
Blalock, B. K., Charlotte; Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Boyette, E. C., Charlotte; Balt. Med. Coll., 1893	1898	1906
Brenizer, A. G., Jr., Charlotte; Johns Hopkins, 1908, and Univ. of Heidelberg	1911	1911
Caldwell, J. H., Charlotte; N. C. Med. Coll., 1914	1914	1914
Collins, George, Charlotte; Jeff. Med. Coll., 1920	1921	1922
Craven, Thomas, Huntersville; Jeff. Med. Coll., 1917	1917	1918
Craven, W. W., Huntersville; Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte (Hon.); Univ. of Md., 1893	1892	1894
Crowell, L. A., Lincolnton; Balt. Med. Coll., 1892	1892	1898
Davidson, John E. S., Charlotte; Univ. of Md., 1894	1898	1898
De Armon, J. McC., Charlotte (Hon.); Univ. of Md., 1886	1886	1887
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, I. W., Charlotte (Hon.); Bellevue Med. Coll., 1878	1878	1878
Faison, Yates W., Charlotte; Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte; Va. Univ. Coll. of Med., 1906	1909	1909
Fetner, L. M., Charlotte; N. C. Med. Coll., 1914	1914	1915
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chir., Phila., 1913	1922	1923
Gibbon, James, Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887	1887	1888
Graham, Wm. A., Charlotte (Hon.); Columbia Univ., P. and S., N. Y., 1888	1889	1890
Hand, Edgar H., Pineville; N. C. Med. Coll., Charlotte, 1907	1907	1913
Henderson, S. McD., Charlotte; Univ. of Md., 1894	1894	1904
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921

*Registered.

Name and Address	Licensed	Joined State Society
Houser, O. J., Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Rt. 1 (Hon.); Bellevue Hosp., 1875	1880	1880
Hunter, M. C., Huntersville; Coll. of P. and S., Balt., 1882	1882	1882
Hunter, Myers, Charlotte; Georgetown Univ., 1905	1906	1908
Irwin, Hamner C., Pocatella, Idaho; Univ. of Md., 1905	1908	1916
Irwin, J. R., Charlotte (Hon.); Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte; Med. Dept., Vanderbilt Univ., 1899	1913	1916
Justice, Z. K., Davidson; N. C. Med. Coll., 1903	1917	1919
Lafferty, Robert H., Charlotte; N. C. Med. Coll., 1906	1906	1908
Leinbach, Robert F., Charlotte; Univ. of Pa.; 1907	1907	1910
Linney, R. Z., Charlotte; Georgetown Univ., 1901	1914	1918
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
McKay, Hamilton W., Charlotte; N. C. Med. Coll., 1909; Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte; Univ. of Md., 1896	1896	1903
McManus, H. F., Mathews; Atlanta School of Med., 1913	1922	1923
McPhail, L. D., Charlotte; Univ. of Md., 1900	1900	1902
McPhaul, W. A., Charlotte; Univ. of Nashville, 1904	1905	1907
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte; Univ. of Md., 1905	1902	1907
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Mills, C. H. C., Charlotte; Univ. of Md., 1897	1900	1919
Miller, Oscar L., Gastonia; Atlanta Coll. P. & S., 1912	1921	1922
Misenheimer, Charles A., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1882	1882	1882
Montgomery, John C., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1891	1891	1895
Moore, Alexander W., Charlotte; Univ. Va., 1901; Univ. and Bellevue Hosp. Med. Coll., 1902	1912	1913
Moore, Baxter S., Charlotte; Univ. of Va., 1902	1905	1905
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912
Munroe, H. Stokes, Charlotte; N. C. Med. Coll., 1902; Jeff. Med., 1903	1902	1904
Munroe, J. P., Charlotte (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; N. C. Med. Coll., 1911; Bellevue Hosp. Med. Coll., 1916	1911	1920
Myers, John Q., Charlotte; N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte; Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med., 1919	1921	1922
Newell, Leone B., Charlotte; Univ. of N. C., 1905	1905	1908
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1924
Nisbet, D. Heath, Charlotte; Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte; Med. Coll. of S. C., 1889	1889	1889
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1909

Name and Address	Licensed	Joined State Society
Parry, Leo D., Charlotte; Md. Med. Coll., 1913; Univ. Pa., 1922	1924	1924
Patterson, Reid, Charlotte; N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte; N. C. Med. Coll., 1906	1906	1908
Petrie, Robert Wm., Charlotte; Univ. of Md.. 1903	1903	1903
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Pharr, Wm. W., Charlotte (Hon.); P. and S., Balt., 1881	1885	1887
Phillips, C. C., Charlotte; N. C. Med. Coll., Charlotte, 1912	1912	1917
Pressly, Geo. W., Charlotte (Hon.); Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., R. F. D., Charlotte; Univ. Coll. of Med., Richmond, 1907	1907	1908
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919	1919	1922
Reid, Thomas N., Matthews; N. Y. Univ. Med. Coll., 1891	1891	1904
Ross, Otho B., Charlotte; Univ. of Pa., 1909	1909	1912
Scanlon, W. G., Charlotte; Vanderbilt Univ., 1923	1924	1925
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914	1914	1920
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910	1910	1913
Simmons, John O., Charlotte; U. S. Grant Univ., 1904	1906	1908
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1914
Sparrow, Thos. De Lamar, Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Strong, Charles M., Charlotte; Univ. of Md., 1889	1889	1898
Strong, Wm. M., Charlotte; N. C. Med. Coll., Charlotte, 1904	1904	1905
Sullivan, Claude H., Charlotte; Emory Univ., 1917	1924	1925
Taylor, H. C., Charlotte, Chadwick Sta.; Tenn. Med., 1886	1910*	1915
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Townsend, M. L., Raleigh; Indiana Med. Coll., 1906	1912	1919
Tucker, John H., Charlotte; Univ. of Va., 1899	1901	1911
Tydeman, F. W. L., Wood River, Ill.; N. C. Med. Coll., Charlotte, 1912	1912	1918
Wakefield, Harry A., Charlotte; N. C. Med. Coll., 1908	1908	1911
Walker, L. D., Charlotte; Med. Coll. of Va., 1908	1917	1919
Wannamaker, Edward J., Jr., Charlotte; Wofford, 1917; Univ. of Pa., 1921	1924	1924
Whisnant, Albert M., Charlotte; P. and S., Balt., 1893	1893	1899
White, Thomas P., Charlotte; Univ. of Pa., 1922	1924	1925
Whitley, Ayer, Matthews; Balt. Med. Coll., 1908	1908	1919
Wingate, G. C., Charlotte; N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1911
Witherspoon, B. J., Charlotte; S. C. Med. Coll., 1894	1900	1911
Woodruff, Julian S., Charlotte; Univ. of Md., 1920	1920	1923

MITCHELL-WATAUGA COUNTIES SOCIETY

President : .....

Secretary : .....

*Registered.

Name and Address	Licensed	Joined State Society
Bingham, G. D., Sugar Grove; Univ. Tenn., 1905; Lincoln Mem. Univ., 1908	1909	1920
Butt, Virgil R., Bakersville; Jeff. Med. Coll., 1886	1889*	1907
Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
Hodges, J. M., Boone; Balt. Med. Coll., 1904	1906	1925
Lambert, C. F., Spruce Pine; Jeff. Med. Coll., 1921	1921	1923
Perry, H. B., Valle Crucis; N. C. Med. Coll., 1905	1905	1922
Peterson, C. A., Spruce Pine; N. C. Med. Coll., 1907	1907	1908
Peterson, J. M., Spruce Pine; Tenn. Med., 1902	1918	1921
MONTGOMERY COUNTY SOCIETY		
President: A. F. Thompson, Troy; Med. Coll. of Indiana, 1895	1895	1904
Secretary: Charles Daligny, Troy (Hon.); Univ. of Paris, 1878	1889*	1891
Boyles, A. C., Troy; Univ. of Md., 1887; Balt. Univ. School Med., 1898	1889*	1912
Dameron, Ernest L., Star; N. C. Med. Coll., 1911	1911	1913
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886	1886	1892
McMillan, J. M., Candor; P. and S., Atlanta, 1909	1909	1911
Rankin, Pressly R., Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Shamburger, John B., Star (Hon.); Univ. of Md., 1890	1890	1892
MOORE COUNTY SOCIETY		
President: A. McN. Blue, Carthage; Tulane Univ., 1915	1916	1917
Secretary: J. W. Dickie, Southern Pines; Jeff. Med. Coll., 1918	1920	1921
Achorn, John W., Pinebluff; Bowdoin Med. School, 1887; Bellevue Med. Coll., 1889	1899	1899
Blair, A. McNiel, Southern Pines; Niagara Univ., 1897	1904	1906
Bowman, H. E., Aberdeen; N. C. Med. Coll., 1904	1904	1919
Davis, J. Franklin, High Falls; Med. Coll. of Va., 1912	1912	1914
Grier, Charles T., Carthage; N. C. Med. Coll., 1910	1912	1913
Harper, W. T., Southern Pines; Jeff. Med. Coll., 1920	1920	1923
Holt, Erastus E., Southern Pines; Med. School of Maine, 1874; Columbia Univ. Coll. of P. and S., 1875	1921	1922
McDonald, Augustus A., Jackson Springs; N. C. Med. Coll., 1905	1907	1912
McDuffie, W. N., Hemp; Emory Univ. Sch. of Med., Atlanta, 1916	1920	1921
McLeod, A. H., Aberdeen; Balt. Med. Coll., 1896	1896	1904
Marr, M. W., Pinehurst; Tufts Coll. Med. School, Boston, 1907	1909	1915
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915	1915	1916
Mudgett, W. C., Southehrn Pines; Maryland Med. Coll., 1903	1908	1911
O'Briant, A. L., Cameron; Jeff. Med., 1920	1920	1922
Rosser, R. G., Vass; N. C. Med. Coll., Charlotte, 1909	1909	1917
Shields, Henry B., Carthage; Atlanta Med., 1882	1887	1904
Street, M. E., Glendon; P. and S., Balt., 1893	1893	1902

*Registered.

NASH COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: H. Lee Large, Rocky Mount; Med. Coll. of Va., 1917	1918	1918
Secretary: Adam T. Thorp, Rocky Mount; Univ. of Pa., 1921	1921	1923
Battle, Ivan Proctor, Rocky Mount; Jefferson Med., 1904	1905	1914
Battle, James P., Nashville; Univ. of Md., 1889	1888	1904
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope; Jeff. Med. Coll., 1888	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Coppedge, T. O., Nashville; P. and S., Balt., 1908	1909	1917
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Rich., 1911	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Denton, A. L., Castalia; Med. Coll. of Va., 1918	1921	1923
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919	1919	1922
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904	1906	1919
Hines, E. R., Rocky Mount; Med. Coll. of S. C., 1916	1916	1917
Kinlaw, Wm. Bernard, Rocky Mount; Univ. of Pa., 1920	1920	1923
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemuel W., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Looney, J. J. W., Rocky Mount; Univ. of Va., 1909	1919	1919
Marriott, Henry B., Battleboro; Univ. of Md., 1883	1883	1904
Martin, J. H., Red Oak; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount; P. and S., Balt., 1907	1907	1920
Quillen, Emile B., Rocky Mount; Univ. of Md., 1904	1906	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount; Univ. of La., 1914	1915	1916
Speight, J. P., Rocky Mount; Jeff. Med. Coll., 1906	1906	1917
Staley, S. Walter, Rocky Mount; Med. Coll. of S. C., 1901	1901	1914
Vann, J. R., Jr., Spring Hope; Jeff. Med. Coll., 1917	1917	1919
Whitehead, J. P., Rocky Mount; Univ. of Md., 1899	1899	1914
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1916
Wimberly, G. L., Rocky Mount; Univ. of Md., 1883	1883	1916
Winstead, J. A., Nashville; N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY

President: Ernest S. Bullock, Wilmington; Univ. of Md., 1911	1911	1911
Secretary: D. R. Murchison, Wilmington; Johns Hopkins, 1916	1922	1923
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923	1923	1924
Bellamy, Robert H., Wilmington; Jeff. Med. Coll., 1902	1902	1902
Bowdoin, George W., Wilmington; Med. Coll. of Va., 1914	1914	1916
Britt, T. C., Wilmington; Jeff. Med. Coll., 1921	1921	1925
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington; Univ. of N. C., 1905	1905	1907
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916	1916	1918

Name and Address	Licensed	Joined State Society
Davis, Ralph H., Wilmington; George Washington Univ., 1917	1920	1920
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1921	1916
Farthing, L. E., Wilmington; Univ. of N. C., 1906	1906	1913
Freeman, J. D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Galloway, Walter Curtis, Wilmington (Hon.); Washington Univ., 1874	1880	1880
Graham, Benj. R., Wilmington; Univ. of Va., 1895	1895	1916
Green, Thomas M., Wilmington; Univ. of Md., 1901	1901	1904
Hall, James S., Wilmington; Univ. of S. Calif., 1900	1921	1924
Harriss, Andrew H., Wilmington (Hon.); Medico-Chirurgical Coll., Phila., 1893	1892	1894
Hart, E. R., Wilmington; Univ. of Md., 1901	1901	1918
Hoggard, J. T., Wilmington; Univ. Med. Coll., Rich., 1906	1906	1922
Honnet, Joseph H., Wilmington; Columbia Univ., 1900	1901	1904
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1919
Jewett, Robert D., Wilmington (Hon.); Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920	1920	1921
Koonce, S. Everett, Wilmington; P. and S. of Balt., 1896	1896	1900
McMillan, W. D., Wilmington (Hon.); Univ. of Md., 1869	1889*	1892
Mebane, W. C., Wilmington; N. C. Med. Coll., 1905	1905	1916
Moore, Julian A., Wilmington; Univ. of Pa., 1918	1918	1921
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910	1910	1911
Murphy, John G., Wilmington; Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Akron, Ohio; Baltimore Med. Coll., 1893	1907	1908
Peterson, W. C., Wilmington; Univ. of Va., 1917	1920	1921
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington (Hon.); Long Island Coll. Hosp., 1879	1880	1881
Sidbury, J. B., Wilmington; Columbia Univ., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914	1914	1920
Slocum, R. B., Wilmington; Johns Hopkins, 1905	1907	1907
Smith, Slade A., Wilmington; N. C. Med. Coll., 1907	1907	1921
Watson, Thomas M., Wilmington; Tulane Univ., 1919	1919	1920
Wessell, John C., Wilmington; Univ. of Md., 1900	1900	1900
Wood, E. J., Wilmington; Univ. of Pa., 1902	1903	1903

NORTHAMPTON COUNTY SOCIETY

President :		
Secretary: Walter R. Parker, Woodland; Med. Coll. of Va., 1916	1916	1919
Boone, S. B., Jackson; Univ. Coll. of Med., Va., 1911	1911	1921
Fleetwood, Jos. C., Conway; Tulane, 1921	1921	1923
Futrell, W. E., Lasker; Jeff. Med. Coll., 1921	1921	1923
Lewis, H. W., Jackson (Hon.); Univ. of N. Y., 1877	1889*	1887
McDaniel, L. E., Lasker; Univ. of Md., 1911	1915	1916

*Registered.

Name and Address	Licensed	Joined State Society
Mitchell, Z. P., Jackson; Med. Coll. of Va., 1920	.....	1921
Parker, Clifton G., Woodland; Univ. Coll. of Med., Va., 1907	1907	1913
Parker, C. P., Seaboard; Univ. Coll. of Med., Va., 1915	1915	1916
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY SOCIETY

President: John P. Henderson, Swansboro; Va. Med. Coll., 1918	1919	1921
Secretary:	.....	.....
Bryan, Lorenzo D., Sneads Ferry; Tulane, 1910	1910	1911
Cox, E. L., Jacksonville (Hon.); Univ. of Md., 1889	1889	1892
Sutton, Carl W., Richlands; Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville; Tulane Univ., 1878	1889*	1905

PAMLICO COUNTY SOCIETY

President: D. A. Dees, Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: J. J. Purdy, Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental; Med. Coll. of Va., 1903	1903	1916
McCotter, St. Elmo, Bayboro; P. and S., Atlanta, 1908	1908	1909
Woodard, E. D., Bayboro; Loyola Univ., 1919	1920	1921

PASQUOTANK-CAMDEN-DARE COUNTIES SOCIETY

President: Zenas Fearing, Elizabeth City; Univ. Coll. of Med., 1901	1901	1914
Secretary: J. L. McCabe, Elizabeth City; Med. Coll. of Va., 1917	1924	1925
Barkwell, J. H., Weeksville; Atlanta School of Med., 1908	1924	1925
Bulla, M. S., Elizabeth City; Miami Med. Coll., Cin., O., 1905	1921	1921
Combs, Howard J., Elizabeth City; Jeff. Med. Coll., 1918	1918	1919
Fearing, Isaiah, Elizabeth City; P. and S., Balt., 1896	1896	1904
Griggs, John B., Elizabeth City; Univ. of Md., 1892	1892	1904
Hoggard, Wm. Alden, Hertford, Rt. 3; Univ. Coll. Med., Va., 1907; Vanderbilt Univ., 1914	1907	1910
Hoyle, Hughes B., Manteo; N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City; Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville; Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford; Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City; Univ. of Edinburgh, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City; Univ. of Md., 1903	1903	1904
Walker, H. D., Elizabeth City; Univ. of Md., 1902	1902	1902
Williams, Claude B., Elizabeth City; Univ. Coll. of Med., Richmond, 1903	1903	1907

*Registered.

PENDER COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President :		
Secretary:		
Taylor, W. I., Burgaw; N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President: Bedford E. Love, Roxboro; Univ. of Md., 1904	1904	1905
Secretary: Austin F. Nichols, Roxboro; Univ. of N. C., 1908	1908	1909
Beam, H. M., Roxboro; Columbia Univ., N. Y., 1918	1918	1919
Gentry, Geo. W., Timberlake; Univ. of N. C., 1910	1910	1911
Hambrick, Robt. T., Hickory; Univ. of Tulane, 1923	1923	1924
Long, Walter T., Roxboro; Balt. Med. Coll., 1905	1905	1907
Merritt, John H., Woodsdale, Rt. 2; Univ. of N. C., 1906	1907	1908
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Walter W. Dawson, Grifton; Univ. of Md., 1897	1897	1900
Secretary:		
Basnight, Thos. G., Stokes; Univ. of Md., 1904	1905	1907
Beasley, E. B., Fountain; Univ. of Pa. School of Med, 1911	1911	1915
Cox, B. T., Winterville; Univ. of Md., 1888	1888	1890
Dickinson, Elijah T., Greenville; Med. Coll. of Va.,1895	1895	1900
Dixon, G. G., Ayden; Med. Coll. of Va., 1915	1915	1917
Dixon, Joseph, Greenville; Med. Coll. of Va., 1894	1893	1895
Dixon, Wm. H., Ayden; Med. Coll. of Va., 1901	1901	1903
Ellen, C. J., Greenville; Univ. Coll. of Med., Rich., 1911	1911	1919
Frizzell, M. T., Ayden; Univ. Coll. of Med., Richmond, 1907	1907	1909
Garrenton, Cecil, Bethel; Med. Coll. of Va., 1908	1908	1915
Green, J. C., Greenville; Med. Coll. of Va., 1900	1900	1915
Hemingway, J. D., Bethel; N. C. Med. Coll., 1915	1917	1917
Jones, C. M., Grimesland (Hon.); Univ. of Md. and P. and S., Balt., 1892	1892	1895
Laughinghouse, Chas. O'H., Greenville (Hon.); Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville; Balt. Med. Coll., 1897	1897	1903
Morrill, Jenness, Falkland; Univ. of Md., 1888	1888	1900
Moseley, H. P., Farmville; Univ. Coll. of Med., Rich., 1912	1912	1915
Nobles, Jos. E., Greenville (Hon.); Jeff. Med. Coll., 1899	1899	1902
Outland, C. L., Greenville; Med. Coll. of Va., 1917	1917	1920
Pace, K. B., Greenville; Jeff. Med. Coll., 1914	1914	1920
Skinner, Louis Cotton, Greenville; Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Whitfield, Wm. Cobb, Grifton (Hon.); Univ. of Md., 1884	1884	1884
Willis, W. M., Greenville; Med. Coll. of Va., 1914	1915	1924
Wooten, W. I., Greenville; Jeff. Med. Coll., 1920	1920	1920

RANDOLPH COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President: C. A. Hayworth, Asheboro; Univ. of Md., 1913	1913	1914
Secretary: W. L. Lambert, Asheboro; Jeff. Med. Coll., 1921	1921	1923
Caveness, R. L., Coleridge; Balt. Univ., 1892	1892	1925
Helms, T. L., Randleman; N. C. Med., 1914	1915	1917
Hubbard, Charles C., Farmer; Jeff. Med. Coll., 1888	1890	1904
Hunter, J. V., Asheboro; Univ. of Louisville, 1898	1898	1905
Moore, Wm. James, Asheboro; P. and S., Balt., 1893	1893	1901
Myers, R. W., R. 1, Fullers; Chattanooga Med. Coll., 1897		1909
Redding, Alex. H., Cedar Falls; Coll. of P. and S., Balt., 1887	1889*	1904
Shepard, F. A., Liberty; Univ. of Tenn., 1908	1908	1919
Sumner, G. H., Asheboro; Tulane Univ., 1923	1923	1924
Sumner, Wm. I., Randleman; Univ. of Tenn., 1893	1894	1904
Tate, C. S., Ramseur; Balt. Med. Coll., 1893	1896	1914
Wilkerson, Charles E., Randleman; Univ. of Nashville, Tenn., 1907	1908	1909

RICHMOND COUNTY SOCIETY

President: W. R. McIntosh, Rockingham; N. C. Med. Coll., 1913	1916	1917
Secretary: A. C. Everett, Rockingham; Univ. of Md., 1897	1897	1903
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham; Univ. of Md., 1889	1887	1904
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918	1920	1921
Henry, T. B., Rockingham; Columbia Univ. Coll. P. and S., N. Y., 1917	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1911
Hunter, Norman C., Rockingham; Medico-Chi. of Pa., 1897	1899	1904
James, Albert W., Hamlet; Jeff. Med. Coll., Phila., 1918	1918	1921
James, W. D., Hamlet; Jeff. Med. Coll., 1908	1908	1908
Kinsman, Henry F., Hamlet; Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham; Venderbilt Univ., 1894	1894	1903
McCreary, A. B., Rockingham; Univ. of Tenn., 1922	1924	1924
Maness, J. M., Ellerbe; Univ. of N. C., 1909	1909	1910
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Teague, S. E., Hamlet; Tulane Univ. of La., 1921	1921	1925
Terry, Wm. Calvin, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Webb, W. P., Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: J. Fred Nash, St. Pauls; N. C. Med. Coll., 1914	1914	1916
Secretary: W. E. Evans, Rowland; Med. Coll. of Va., 1894	1894	1904
Andrews, Nathan H., Rowland; N. C. Med. Coll., 1911	1911	1912
Baker, Horace M., Lumberton; Harvard Med. School, 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912	1912	1915

*Registered.

Name and Address	Licensed	Joined State Society
Bowman, E. L., McDonalds; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med., 1914	1923	1924
Brown, J. P., Fairmont; Univ. of Md., 1883	1889*	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Costner, Thos. F., Lumberton; Jeff. Med. Coll., 1882	1889*	1918
Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Hays, A. H., Fairmont; Atlanta Med., 1917	1917	1919
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1907
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920	1920	1922
Johnson, Thomas C., Lumberton; Med. Coll. of Va., Richmond, 1903	1903	1903
Knox, John, Jr., Lumberton; Univ. of Md., 1906	1907	1907
McClelland, Joseph O., Maxton; Med. Coll. of Va., Richmond, 1908	1912	1913
McMillan, Benj. F., Red Springs (Hon.); Univ. of Md., 1882	1884	1884
McMillan, R. D., Red Springs; Univ. of Md., 1910	1911	1912
Martin, J. A., Lumberton; Med. Coll. of Va., Richmond, 1915	1915	1917
Morris, Carlyle, Maxton; Univ. of Pa., 1922	1922	1924
Poole, Claud T., St. Pauls; N. C. Med. Coll., 1909	1909	1913
Pope, Henry T., Lumberton; N. C. Med. Coll., 1894	1893	1902
Price, H. L., Fairmont; N. C. Med. Coll., 1914	1914	1920
Ricks, Leonard E., Fairmont; Med. Coll. of Va., 1896	1896	1913
Rozier, R. G., St. Pauls; Univ. of Md., 1899	1899	1904
Smith, John McNeill, Rowland; Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos., Lumber Bridge (Hon.); Univ. of Louisville, 1888	1888	1890
Whitehead, S. L., Lumberton; Jeff. Med. Coll., 1921	1921	1923

ROCKINGHAM COUNTY SOCIETY

President: P. W. Fetzer, Madison; Univ. of Va., Dept. Med., 1916	1916	1920
Secretary: P. C. Carter, Madison; Univ. of Md., 1916	1916	1920
Abernathy, Miles B., Reidsville; N. C. Med. Coll., 1906	1906	1910
Boaz, Thos. A., Stoneville; Coll. of P. and S., Baltimore, 1892	1892	1905
Casteen, Kenan, Mayodan; Univ. of Bellevue Hosp. Med. Coll., 1918	1919	1921
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911	1911	1914
Dixon, Hubert C., Madison; Univ. and Bellevue Hosp. Med. Coll., 1916	1916	1921
Jett, Samuel G., Reidsville; Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville; R. F. D.; N. C. Med. Coll., 1907	1909	1910
Lister, J. L., Leaksville; Med. Coll. of Va., 1896	1896	1909

*Registered.

Name and Address	Licensed	Joined State Society
McBryde, M. H., Reidsville; Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville; Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville; Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray; Chicago Coll. of Med. and Surg., 1913	1915	1918
Pritchett, H. W., Reidsville; Tulane Univ., 1919	1924	1924
Ray, John B., Leaksville; Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.		1898
Stokes, P. B., Kings Mountain; Med. Coll. of Va., 1917	1917	1920
Taylor, James T., Madison; Univ. of Md., Coll. of P. & S., Balt., 1908	1908	1910
Taylor, T. G., Leaksville; Ky. School of Med., 1877	1909*	1910
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1907
Tyner, Carl V., Leaksville; Univ. and Bellevue Hosp. Med. Coll., N. Y., 1916	1916	1919
Webb, M. L., Mayodan; Atlanta School of Med., 1909	1924	1925
Webb, S. Edgar, Draper; Univ. of N. C., 1908	1908	1916
Wharton, Chas. R., Ruffin; Med. Coll. of Va., 1897	1897	1904
Wilson, W. P., Madison; N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President: Glenn Wm. Choate, Salisbury; N. C. Med. Coll., 1909	1909	1909
Secretary: Harold H. Newman, Salisbury; Johns Hopkins Univ., 1913	1914	1916
Armstrong, C. W., Salisbury; Univ. of Md., 1914	1914	1915
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Boger, D. T., Rockwell; N. C. Med. Coll., 1906	1906	1921
Boyden, Wm. C., China Grove; N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury; N. C. Med. Coll., 1910	1912	1914
Brawley, Robert V., Salisbury; Univ. Coll. of Med., Va., 1901	1901	1904
Brown, Clarence E., Faith; N. C. Med. Coll., 1918	1920	1921
Brown, G. A., Mt. Ulla; Univ. Coll. of Med., 1897	1897	1898
Busby, Julian G., Spencer; Univ. of Md., 1904	1904	1905
Choate, J. W., Salisbury; N. C. Med. Coll., 1915	1915	1924
Clement, Edward B., Salisbury; Jeff. Med. Coll., 1906	1906	1913
Councill, J. B., Salisbury (Hon.); P. and S., Balt., 1885	1885	1885
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923	1923	1925
Ellis, Frank A., Salisbury; Univ. of Pa., 1918	1919	1919
Flemming, G. M., Cleveland; Emory Univ. School of Med., 1919	1919	1921
Heilig, Herman G., Salisbury; Univ. of Md., 1899	1899	1904
Ketchie, J. M., Salisbury; Jeff. Med. Coll., 1922	1922	1925
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916	1916	1920
McKenzie, Wm. W., Salisbury (Hon.); Jeff. Med., 1893	1893	1894

*Registered.

Name and Address	Licensed	Joined State Society
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury; Med. Coll. of Va., 1897	1899	1903
Peeler, John H., Salisbury; Va. Univ. Coll. of Med., 1899	1899	1904
Plyler, R. J., Salisbury; Univ. of Md., 1921	1924	1925
Ramsay, Jas. G., Salisbury; Univ. of Pa., 1922	1924	1924
Seay, T. W., East Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer; Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer; Univ. of Tenn., 1903	1903	1913
Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
Stokes, Jas. Ernest, Salisbury; Univ. of Md., 1892	1900	1901
Summerell, E. M., China Grove (Hon.); Univ. of Pa., 1883	1883	1883
Tatum, Walter Lowe, Salisbury; Jeff. Med. Coll., 1922	1922	1924
Trantham, H. T., Salisbury (Hon.); Univ. of N. Y., 1875	1879	1879
Van Poole, C. M., Salisbury (Hon.); P. and S., Balt., 1880	1880	1880
Van Poole, Carl M., Jr., China Grove; Univ. of Md., 1916	1917	1925
West, Robert M., Salisbury; Med. Coll. of Va., 1900	1900	1904
Whitehead, John, Salisbury (Hon.); Univ. of Pa., 1880	1880	1880
Woodson, Charles W., Salisbury; Columbia Univ., P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: Adin Adam Rucker, Rutherfordton; Univ. of Md., 1908	1908	1909
Secretary: Wm. C. Bostic, Forest City; Chattanooga Med. Coll., 1899; N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside; Chicago Coll. of Med. and Surg., 1910	1910	1911
Andrews, Robert M., Bostic; Memphis Hosp. Med. Coll., 1901	1904	1905
Biggs, Montgomery H., Rutherfordton; Univ. of Pa., 1897	1907	1908
Buchanan, C. L., Union Mills; Tennessee Medical, 1910	1910	1914
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Duncan, Amos C., Forest City; Univ. of Va., 1919	1919	1920
Gold, Charles F., Ellenboro; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen; Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campobello, S. C., Rt. 4; Atlanta Coll., P. and S., 1911	1911	1923
Hicks, Romeo, Henrietta; Southern Med. Coll., Atlanta, 1888	1889*	1899
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920
Murphy, D. P., Rutherfordton; Univ. of Pa., 1916	1922	1923
Norris, Henry, Rutherfordton; Univ. of Pa., 1906	1907	1908
Reid, George P., Forest City; Univ. Coll. of Med., Va., 1895	1894	1899
Scruggs, F. B., Cliffside; Jeff. Med. Coll., 1919	1919	1922

*Registered.

Name and Address	Licensed	Joined State Society
Thompson, W. A., Rutherfordton; P. and S., Balt., 1885	1889*	1904
Twitty, John C., Rutherfordton; Balt. Med. Coll., 1892	1892	1904

SAMPSON COUNTY SOCIETY

President: O. L. Parker, Clinton; Med. Coll. of Va., 1918	1918	1919
Secretary: Paul Crumpler, Clinton; Univ. of Tenn., 1907	1907	1908
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919	1919	1921
Butler, B. F., Clinton; Univ. Coll. of Med., Richmond, 1911	1911	1916
Hollingsworth, E. T., Clinton; N. C. Med. Coll., 1912	1912	1915
Kerr, John D., Clinton; Univ. of Md., 1908	1908	1910
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton, R. F. D.; Univ. Coll. of Med., Va., 1879	1879	1902
Parker, J. R., Clinton; Baltimore Med. Coll., 1898	1898	1919
Sessoms, E. T., Autryville; N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg; Univ. Coll. of Med., Va., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Maryland, 1916	1916	1920
Small, V. R., Clinton; Ohio State Univ., 1916	1920	1921
Underwood, O. E., Roseboro; Univ. Coll. of Med., Va., 1909	1909	1910
Wilson, Robert B., Newton Grove; Ky. School of Med., 1889	1889	1904

SCOTLAND COUNTY SOCIETY

President: W. G. Shaw, Wagram; P. and S., Balt., 1892	1895	1904
Secretary: Marcus B. Wilkes, Laurel Hill; N. C. Med. Coll., 1912	1923	1923
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913	1913	1917
Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912	1912	1913
Gibson, John S., Gibson; Univ. of Md., 1905	1905	1907
James, F. P., Laurinburg; Univ. of Pa., 1916	1916	1917
John, Peter, Laurinburg; Univ. of Md., 1897	1897	1904
Livingston, Everett Alex., Gibson; Univ. of Md., 1912	1912	1913
McLean, Allen, Wagram; Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg; Univ. of Md., 1906	1907	1908
Pate, James G., Gibson; Univ. of Pa., 1916	1916	1917
Wilcox, J. W., Laurel Hill; Univ. of N. C., 1906	1906	1906

STANLY COUNTY SOCIETY

President: C. M. Lentz, Albemarle; N. C. Med. Coll., 1909	1909	1910
Secretary: Julius Clegg Hall, Albemarle; Univ. Coll. of Med., Va., 1899	1899	1908
Allen, Jos. A., New London; Univ. Coll. of Med., Va., 1901	1901	1904
Brunson, E. P., Albemarle; Jeff. Med. Coll., 1921	1922	1923
Campbell, Jas. I., Norwood; N. C. Med. Coll.	1898	1904
Cox, Benj. F., Palmerville; Coll. of P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle; Univ. of N. C., 1909	1909	1910
Hartsell, F. E., Oakboro; Balt. Med. Coll., 1895	1895	1902

*Registered.

Name and Address	Licensed	Joined State Society
Hathcock, Thomas A., Norwood; Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle; Univ. of Md., and P. and S., Balt., 1897	1897	1904
Laton, James F., Albemarle; N. C. Med. Coll., 1904	1904	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., Va., 1913	1913	1915
Shaver, W. T., Badin; Univ. of Md., 1918	1920	1921
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921	1921	1922
STOKES COUNTY SOCIETY		
President: S. F. Tillotson, King; N. C. Med. Coll., 1905	1905	1922
Secretary: R. H. Morefield, Westfield, Rt. 1; N. C. Med. Coll., 1906	1906	1917
Ellington, Jas. H., Sandy Ridge; P. and S., Balt., 1872	1889*	1904
Hanes, J. L., Pine Hall; Univ. of Maryland, 1902	1902	1920
Helsabeck, C. J., Germantown; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., Mizpah; N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove (Hon.); Univ. of N. Y., 1868	1894*	1892
McCanless, Wm. V., Danbury; Univ. of N. Y., 1893	1889*	1904
Phillips, M. D., Dalton (Hon.); Univ. of N. Y., 1880	1881	1882
Stone, Grady E., King; N. C. Med. Coll., 1915	1915	1920
SURRY COUNTY SOCIETY		
President: James T. Smith, Westfield; N. C. Med. Coll., 1898	1899	1918
Secretary: R. C. Mitchell, Mt. Airy; Univ. of Pa., 1919	1921	1923
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Baird, C. A., Mt. Airy; N. C. Med. Coll., 1904	1904	1912
Bernard, Holman, Pinnacle; Med. Coll. of Va., 1912	1914	1919
Flippin, Samuel T., Siloam; N. C. Med. Coll., 1898	1898	1898
Folger, P. B., Dobson; Jeff. Med., 1922	1922	1924
Gambill, I. S., Elkin; N. C. Med. Coll., 1912	1912	1917
Garvey, R. R., Elkin; N. C. Med. Coll., 1915	1915	1919
Hollingsworth, Edward M., Mt. Airy; Coll. of P. and S., Baltimore, 1886	1886	1904
Hollingsworth, Robert E., Mt. Airy; Univ. Coll. of Med., Va., 1898	1899	1904
Lancaster, R. McN., Mt. Airy; N. C. Med. Coll., 1914	1916	1917
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Ring, Joseph W., Elkin; P. and S., Balt., 1880	1890*	1904
Royall, M. A., Elkin; P. and S., Balt., 1885	1889*	1913
Salmons, H. C., Elkin; N. C. Med. Coll., 1904	1904	1908
Smith, Jas. B., Pilot Mt. (Hon.); P. and S., Balt., 1885	1889*	1896
Stone, Wesley M., Dobson; N. C. Med. Coll., 1906	1906	1907
Taylor, William S., Mt. Airy; Jeff. Med. Coll., Phila., 1873	1889*	1894
Wellborn, William R., Elkin; N. C. Med. Coll., 1905	1908	1913
Woltz, J. L., Mt. Airy; Southern Med. Coll., 1897	1902	1904

*Registered.

SWAIN COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President :		
Secretary:		
Holt, R. D., Cherokee; Med. Coll. of Va., 1899	1899	1904

TRANSYLVANIA COUNTY SOCIETY

President:		
Secretary:		
English, Edwin S., Brevard; Univ. of the South, 1901	1902	1904
Lyday, Abram E., Penrose; Lincoln Mem. Univ., 1891	1909	1904
Lyday, Wm. Monroe, Brevard; Coll. of P. and S., 1885	1889*	1904
Lynch, Geo. B., Brevard; Univ. of Md., 1914	1920	1923
Stokes, R. L., Brevard; P. and S., Baltimore, 1903	1921	1925
Summey, T. J., Brevard; Jeff. Med. Coll., 1915	1915	1916
Wallis, W. J., Brevard; P. and S., Balt., 1897	1897	1903
Wilkerson, J. B., Rosman; Memphis Hosp. Med. Coll., 1906	1923	1925

UNION COUNTY SOCIETY

President: H. D. Stewart, Monroe; Univ. of Md., 1898	1898	1904
Secretary: Raymond Pearson, Monroe; N. C. Med. Coll., 1922	1923	1924
Ashcraft, J. E., Monroe; Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville; Med. Coll. of Va., 1895	1895	1895
Bynum, C. M., Marshville; Med. Coll. of Va., 1914	1914	1918
Garren, R. H., Monroe; Univ. of Nashville, 1900	1901	1904
Goudelock, Jno. J., Monroe; Med. Coll. of S. C., 1923	1924	1924
Jerome, James R., Wingate; Univ. of Md., 1890	1890	1904
Love, William M., Unionville; N. C. Med. Coll., 1915	1915	1919
Mahoney, A. F., Monroe; Univ. Louisville, 1911	1923	1924
Neal, John W., Monroe; N. Y. Univ. Med. Coll., 1884	1887	1904
Payne, R. L., Monroe; Tulane Univ., 1911	1911	1912
Perkins, David R., Marshville; Balt. Med. Coll., 1903	1906	1907
Pruitt, G. C., Monroe; Atlanta Coll. of P. and S., 1911	1920	1920
Richardson, Jas. C., Monroe; Vanderbilt Univ., 1920	1920	1923
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919
Stevens, Samuel A., Monroe; Univ. of Md., 1900	1898	1898
Whitley, A. D. N., Unionville; Univ. of Md., 1897	1897	1904
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917	1920	1921

VANCE COUNTY SOCIETY

President:		
Secretary: J. H. Wheeler, Henderson; Jeff. Med. Coll., 1918	1918	1920
Allen, Benjamin G., Henderson; Columbia Univ., 1904	1904	1908
Bass, H. H., Henderson; Univ. Coll. of Med., 1899	1899	1900
Fenner, Edwin F., Henderson; Univ. of Md., 1905	1906	1908
Furman, Wm. H., Henderson; Jeff. Med. Coll., 1910	1910	1912

*Registered.

Name and Address	Licensed	Joined State Society
Gill, Robt. J., Henderson; Univ. of Pa., 1867	1889*	1900
Harris, Fletcher R., Henderson (Hon.); Univ. of Va., 1881	1883	1883
Newcombe, A. P., Jr., Henderson; Jeff. Med. Coll., 1922	1922	1924
Newell, H. A., Henderson; P. and S., Balt., 1906	1906	1907
Royster, Thomas S., Henderson; Univ. of Pa., 1916	1916	1924
Upchurch, Robert T., Henderson; Jeff. Med. Coll., Phila., 1908	1908	1910

WAKE COUNTY SOCIETY

President: Jos. R. Hester, Knightdale; Univ. of N. C., 1910	1910	1912
Secretary: Louis N. West, Raleigh; Jeff. Med. Coll., 1912	1912	1915
Abernathy, Claude O., Raleigh; Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh; Jeff. Med. Coll., Phila., 1912	1912	1916
Anderson, Albert, Raleigh (Hon.); Univ. of Va., 1888	1889	1890
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Bell, Carl W., Raleigh; Coll. of P. and S., Balt., 1914	1915	1916
Blalock, Nathan M., McCullers; P. and S., Balt., 1890	1890	1904
Bonner, H. M., Raleigh; Med. Coll. of Va., 1897	1897	1918
Brackin, H. B., Raleigh; Univ. of Tenn., 1921	1923	1925
Buffaloe, J. S., Garner; Balt. Med. Coll., 1900	1900	1904
Bulla, A. C., Raleigh; N. C. Med. Coll., Charlotte, 1915	1915	1918
Burt, B. W., Holly Springs; P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Carroll, E. D. Dixon, Raleigh; Woman's Med. Coll., N. Y., 1895	1900	1900
Caveness, Zebulon M., Raleigh; Univ. of N. C., 1903	1903	1903
Cheek, C. E., Fuquay Springs; Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh; Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., Rich., 1914	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920	1920	1923
Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Finch, O. E., Apex; Jeff. Med. Coll., Phila., 1915	1915	1917
Fitzgerald, J. Herbert, Raleigh; Jeff. Med. Coll., 1920	1920	1922
Flowers, Clarence A., Wendell; P. and S., Balt., 1905	1907	1910
Flowers, C. E., Zebulon; Med. Coll., Va., 1913	1915	1916
Fowler, M. L., Zebulon; Coll. of P. and S., Balt., 1881	1889*	1904
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh; Univ. of Md., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1887	1887	1887
Griffin, Thos. A., Wendell; Univ. of Md., 1907	1912	1913
Haywood, Hubert, Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1879	1879	1879
Haywood, Hubert B., Jr., Raleigh; Univ. of Pa., 1909	1909	1910
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh; P. and S., Balt., 1897	1896	1904

*Registered.

Name and Address	Licensed	Joined State Society
Hunter, J. P., Cary; Jeff. Med. Coll., 1919	1919	1921
Jenkins, Charles L., Raleigh (Hon.); N. Y. Univ. Med. Coll., 1890	1890	1894
Johnson, Robert Wade, Apex; Univ. of Tenn., 1900	1901	1904
Jordan, Thos. M., Raleigh (Hon.); P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh; Univ. of Pa., 1911	1911	1912
Judd, James M., Varina; Balt. Med. Coll., 1897	1897	1901
Kitchin, Thurman D., Wake Forest; Jeff. Med., 1908	1908	1908
Knox, Augustus W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1874	1878	1880
Lawrence, B. J., Raleigh; Jeff. Med. Coll., 1918	1918	1920
Lewis, Richard H., Raleigh (Hon.); Univ. of Md., 1871	1877	1877
Long, E. F., Raleigh; Med. Coll., Va., 1909	1909	1912
Lowery, John R., Raleigh; Univ. of Md., 1904	1904	1913
McCuiston, A. M., Raleigh; N. C. Med. Coll., 1911	1911	1917
McDowell, F. C., Zebulon; Univ. of Pa., 1902	1913	1916
McGee, James Wm., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1888	1888	1888
McKee, John S., Raleigh; Univ. of Md., 1907	1908	1909
Mitchener, J. S., Raleigh; Johns Hopkins Univ., 1915	1915	1918
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Neal, Paul N., Raleigh; Harvard, 1919	1920	1921
Noble, R. P., Raleigh; Univ. of N. C., 1907	1907	1916
Proctor, I. M., Raleigh; Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917
Rankin, Watson S., Raleigh; Univ. of Md., 1901	1901	1901
Ray, O. L., Raleigh, Rt. 1; Univ. Coll. of Med., Richmond, 1899	1899	1904
Register, F. M., Raleigh; Ky. School of Med., 1893	1891	1918
Riggsbee, A. E., Morrisville; Univ. of N. C., 1909	1909	1911
Rogers, Jas. Rufus, Raleigh; P. and S., Balt., 1886	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh (Hon.); Bellevue Hosp. Med. Coll., N. Y., 1869	1869	1874
Shore, Clarence A., Raleigh; Johns Hopkins, 1908	1909	1909
Stancill, Wm. W., Raleigh; Univ. Coll. of Med., Va., 1906	1906	1914
Strickland, W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Templeton, James McP., Cary; Balt. Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906	1907	1925
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917	1920	1923
Washburn, B. E., Constant Spring, Jamaica; Univ. Va., 1911	1912	1917
Watson, John B., Raleigh; Univ. of N. C., 1908	1908	1909
Wilkerson, Charles B., Raleigh; Univ. of N. C., 1906	1906	1908
Wilkerson, T. E., Jr., Raleigh; Univ. of Pa., 1914	1914	1916
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922	1922	1923
Wilkinson, R. W., Jr., Wake Forest; Tulane Univ., 1922	1923	1924

Name and Address	Licensed	Joined State Society
Wright, J. B., Raleigh; Univ. Coll. of Med., Va., 1899	1899	1900
Young, L. B., Wake Forest, Rt. 3; P. and S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President: C. H. Peete, Warrenton; Univ. of Pa., 1903	1906	1911
Secretary: H. H. Foster, Norlina; Jeff. Med. Coll, 1919	1919	1923
Holt, T. J., Warrenton; Med. Coll. of Va., 1904	1904	1911
Macon, G. H., Warrenton; Univ. Coll. of Med., Va., 1910	1910	1911
Packard, F. S., Norlina; Medical School of Maine, 1887	1907	1922
Rodgers, W. D., Warrenton; Jeff. Med. Coll., Phila., 1913	1913	1915

WASHINGTON-TYRRELL COUNTIES SOCIETY

President: John W. Speight, Roper; Ky. School of Med., 1885	1885	1904
Secretary: T. L. Bray, Plymouth; Univ. of Md., 1916	1916	1919
Halsey, Benj. F., Roper (Hon.); Vanderbilt Univ., 1893	1894	1894
McClees, Jas. E., Creswell; Med. Coll. of Va., 1916	1919	1920
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917	1917	1922
Mariner, N. B., Belhaven; Univ. Coll. of Med., Va., 1903	1903	1903
Norman, J. Standing, Columbia; Univ. of Md., 1909	1911	1923
Ward, William H., Plymouth (Hon.); Univ. of Md., 1881	1886	1886

WAYNE COUNTY SOCIETY

President: Wm. H. Cobb, Jr., Goldsboro; Jeff. Med. Coll., 1889	1889	1890
Secretary: A. G. Woodard, Goldsboro; Univ. of N. C., 1907	1907	1909
Bizzell, M. E., Goldsboro; Tulane Univ., 1923	1923	1925
Bizzell, Thomas M., Goldsboro; Univ. of Md., 1908	1908	1916
Corbett, L. W., Goldsboro	1925	1824
Crawford, W. J., Goldsboro; Med. Coll. of Va., 1922	1922	1923
Faison, Wm. W., Goldsboro (Hon.); Jeff. Med. Coll., 1878	1883	1883
Ginn, Theo. L., Goldsboro; Med. Coll. of Va., 1901	1901	1904
Henderson, C. C., Mt. Olive; Univ. of Md., 1914	1914	1919
Henderson, T. B., Goldsboro; Med. Coll. of Va., 1906	1914	1915
House, W. H., Goldsboro; Jeff. Med., 1915	1915	1922
Irwin, Henderson, Goldsboro; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911	1911	1917
Jones, Clara E., Goldsboro; Woman's Med. Coll. of Pa., 1894	1894	1897
Lassiter, C. L., Fremont; Jeff. Med., 1915	1915	1918
Linville, W. C., Goldsboro; Univ. of Md., 1903	1903	1923
Miller, Robert B., Goldsboro; Med. Coll. of Va., 1898	1900	1902
Morris, George B., Goldsboro; Univ. of Md., 1910	1910	1912
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Person, H. M., Goldsboro; N. C. Med. Coll., 1913	1913	1916
Rose, David J., Goldsboro; Tulane Univ., 1922	1922	1924
Smith, R. A., Goldsboro (Hon.); Bellevue Hospital, 1882	1882	1887
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906	1907	1912
Spicer, John, Goldsboro; Bellevue Med., 1889	1890	1904
Spicer, William, Goldsboro; Bellevue Hosp. Med. Coll., 1898	1897	1904
Steel, Wm. C., Mt. Olive; Univ. of Md., 1891	1891	1894

Name and Address	Licensed	Joined State Society
Strosnider, Charles F., Goldsboro; Univ. of Md., 1909	1910	1913
Sutton, Wm. G., Seven Springs; Jeff. Med. Coll., 1889	1889	1896
Tatum, M. McI., Mt. Olive; Med. Coll. of Va., 1877	1892*	1925
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923	1923	1924
Whelpeey, Frank L., Goldsboro; Missouri Univ., 1902	1918	1918
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913	1913	1917

WILKES COUNTY SOCIETY

President: Frank H. Gilreath, N. Wilkesboro; Univ. of Nashville, 1898	1898	1898
Secretary: Julian E. Duncan, N. Wilkesboro; Univ. Coll. of Med., Richmond, 1907	1907	1908
Craven, F. C., N. Wilkesboro; Univ. of Md., 1913	1913	1914
Eller, Albert J., Readybranch; P. and S., Balt., 1893	1895	1898
Hutchins, E. M., N. Wilkesboro; N. C. Med. Coll., Charlotte, 1896	1896	1904
Sink, C. S., North Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Somers, L. P., New Castle; Univ. of Md., 1897	1889*	1904
Triplett, W. R., Purlear; N. C. Med. Coll., 1914	1915	1920
Turner, J. M., N. Wilkesboro; Univ. of Louisville, 1881	1889*	1896
White, John W., Wilkesboro (Hon.); Jeff. Med. Coll., Phila., 1889	1889	1890

WILSON COUNTY SOCIETY

President: G. E. Bell, Wilson; Jeff. Med. Coll., 1921	1921	1922
Secretary: C. L. Swindell, Wilson; Univ. of Md., 1909	1909	1920
Anderson, Wade H., Wilson; Univ. of Va., 1902	1904	1904
Anderson, Wm. S., Wilson; Wash. Univ., Balt., 1868	1889*	1900
Barnes, Benjamin F., Elm City; Univ. of Md., 1902	1902	1902
Best, Henry B., Wilson; Univ. of N. C., 1907	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	1924	1924
Brooks, G. M., Elm City; Jeff. Med. Coll., 1918	1919	1919
Eagles, Charles S., Saratoga; Univ. of N. C., 1909	1909	1910
Grady, Leland V., Wilson, Rt. 2; N. C. Med. Coll., 1913	1913	1914
Hackney, Ben H., Lucama; Tulane Univ., 1911	1911	1913
Herring, Benj. S., Wilson; Univ. of Mich., 1900	1901	1901
Hoover, H. R., Wilson; Balt. Med. Coll., 1891	1892	1904
Lamm, Isaac W., Lucama; Univ. Coll. of Med., Va., 1899	1899	1900
Lane, P. P., Wilson; Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson (Hon.); Univ. of Md., 1886	1885	1894
McClees, E. C., Elm City; Med. Coll. of Va., 1917	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Med., Rich., 1913	1913	1920
Moore, Chas. E., Wilson (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.); Univ. of Md., 1883	1883	1890

*Registered.

Name and Address	Licensed	Joined State Society
Moore, K. C., Wilson; Univ. of Mich., 1909	1909	1910
Person, T. E., Stantonsburg; N. C. Med. Coll., 1911	1911	1914
Powell, H. H., Stantonsburg; Med. Coll. of Va., 1911	1911	1914
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson; Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson; Jeff. Med. Coll., 1912	1917	1918
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson; Univ. of Md., 1901	1901	1904
Willis, H. C., Wilson; Memphis P. and S., 1911	1916	1924
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920

YADKIN COUNTY SOCIETY

President:		
Secretary:		
Bryant, Charles G., Jonesville; Louisville Med. Coll., 1894	1903	1904
Couch, V. F., Yadkinville; Columbia Univ., 1910	1910	1919
Leak, Wharton G., East Bend; N. C. Med. Coll., 1900	1899	1904

YANCEY COUNTY SOCIETY

President:		
Secretary:		
Peep, W. A., Ramsaytown; Non-grad.	1905*	1910

*Registered.

INDEX

PAGE

Allan, Dr. William 26, 418
Allen, Dr. C. I. 207
Alphabetical List of Members of Medical Society with Postoffice Address 612
American College of Physicians, Minutes 454
American College of Surgeons, N. C. Section 464
American Medical Association 107, 569, 577
Anderson, Dr. A. 8, 19, 25, 54, 86, 351
Anderson, Dr. P. V. 122, 134
Anemias of Infancy and Childhood, The—*Charles R. Bugg, M. D.* 160
Discussion by—
Dr. McKim Marriott 166
Dr. W. M. Johnson 167
Dr. J. Buren Sidbury 167
Dr. K. C. Moore 168
Dr. C. R. Bugg 168
Annual Report of the Secretary of the N. C. State Board of Health 71
Discussion by—
Dr. Cyrus Thompson 81
Dr. A. A. Kent 81
Dr. K. P. B. Bonner 81, 82
Dr. D. A. Garrison 81
Dr. J. Howell Way 82
Dr. W. S. Rankin 82
Dr. R. S. McGeachy 82
Annual Report of the Sec'y-Treas. of the Medical Society of N. C. 87
Appendicitis in Children with Special Reference to Drainage—*Byrd Charles Willis, M. D.* 202
Discussion by—
Dr. S. O. Black 205
Dr. H. A. Royster 205, 208
Dr. C. C. Phillips 207
Dr. C. I. Allen 207
Dr. B. C. Willis 208, 209
Asheville Civitan Club, Memorial 30
Association of County Medical Society Presidents of N. C. 455
Averitt, Dr. K. G. 427

B

Baker, Dr. Horace M. 494
Bass, Dr. H. H. 183, 189, 200, 201, 219
Bass, Dr. S. P. 181
Beall, Dr. L. G. 408
Beam, Dr. Russell S. 490

PAGE
Bell, Dr. A. E. 132, 241,495
Better Obstetrics; How to Obtain It—*George H. Ross, M. D.* 320
Discussion by—
Dr. J. W. Williams 325
Dr. J. E. Kerr 326
Dr. W. P. Herbert 326
Dr. W. P. Knight 327
Dr. J. W. Long 327
Dr. J. T. Burrus 328
Dr. Richard W. Spicer 328
Dr. E. R. Hines 329
Dr. E. R. Hardin 329
Dr. George H. Ross 330
Bittenger, Dr. S. M. 434
Bitting, Dr. Numa D. 536
Black, Dr. S. O. 205, 480, 501
Blair, Dr. A. McNeil 41
Board of Medical Examiners of the State of N. C., Report 456
Bone Tumors—*C. S. Lawrence, M. D.* 483
Discussion by—
Dr. W. M. Scruggs 486
Dr. R. H. Crawford 487
Dr. A. A. Kent 487, 489
Dr. C. S. Lawrence 489
Bonner, Dr. K. P. B. 45, 55, 81, 82, 456, 462
Bostic, Dr. W. C. 356
Brawley, Dr. R. V. 270
Brockmann, Dr. Harry L. 48
Brooks, Dr. B. U. 174
Bugg, Dr. Charles R. 160, 168
Burrus, Dr. J. T. 328, 340
Butler, Dr. Leroy J. 157
Byerly, Dr. W. G. 234

C

Camphor in Pneumonia and Other Diseases—*D. S. Currie, M. D.* 448
Caton, Dr. G. A. 343
Chase, Dr. H. W. 348, 351, 372
Cheatham, Rev. T. A. 464
Clinical Significance of Gall Bladder Symptoms, The—*J. W. Tankersley, M. D.* 504
Discussion by—
Dr. Robert L. Gibbon 510
Dr. B. C. Willis **512**
Dr. L. A. Crowell 512
Committees—
Report of Committee on Obituaries 25
Report of Committee to Revise Constitution and By-Laws 92
Report of Committee on Public Policy and Legislation 93

PAGE
Report of Committee on Publication ... 94
Report of Committee on Finance ... 94
Nominating Committee ... 110
Report of Committee on Public Health Administration ... 110
Report of Committee on Physicians' Liability Insurance ... 111, 116
Report of Committee on President's Address ... 113
Report of Committee on Nominations ... 114
Conjoint Session ... 71
Constitution and By-Laws of the American Medical Association ... 577
Constitution and By-Laws of the Medical Society of the State of North Carolina ... 553
Cook, Dr. Henry L. ... 414, 424
Cooke, Dr. G. Carlyle ... 470
Coppridge, Dr. W. M. ... 187, 469
Cotton, Dr. C. C. ... 49
Councilor Districts, Reports ... 95
Councilors, Report of Board of ... 94, 116
Crawford, Dr. R. H. ... 487
Crawford W. Long, the Discoverer of Surgical Anaesthesia—*John Wesley Long, M. D.* ... 542
Crowell, Dr. A. J. ... 187, 197, 432, 433, 468, 474
Crowell, Dr. G. B. ... 508
Crowell, Dr. L. A. ... 151, 188, 337, 460, 469, 482, 512
Currie, Dr. D. S. ... 427, 433, 448

D

Daniels, Dr. O. C. ... 282, 306
Dees, Dr. Rigdon O. ... 427
DeLaney, Dr. C. O. ... 464
Discussion of Extravasation of Urine—*Claude B. Squires, M. D.; Hamilton W. McKay, M. D.* ... 183
Discussion by—
Dr. W. M. Coppridge ... 187
Dr. A. J. Crowell ... 187
Dr. L. A. Crowell ... 188
Dr. H. H. Purinton ... 188
Dr. Claude B. Squires ... 189
Dunn, Dr. W. L. ... 70, 228, 234, 235, 236, 242, 242, 249, 259, 396

E

Early Clinical Observations with the Coolidge Water-Cooled Tube in Deep Therapy—*J. Rush Shull, M. D.* ... 400
Eclampsia—*Brodie C. Nalle, M. D.* ... 315
Discussion by—
Dr. I. M. Proctor ... 319
Dr. J. W. Long ... 319
Dr. Brodie C. Nalle ... 320

PAGE

Ectopic Pregnancy—*J. W. McGehee, M. D.* 330

Discussion by—

Dr. J. W. Tankersley 332
Dr. B. C. Willis 333
Dr. J. W. Long 334
Dr. James T. Taylor 334
Dr. B. C. Nalle 334
Dr. J. W. McGehee 334

Eczematoid Ringworm of the Hands and Feet—*Joseph A. Elliott, M. D.* 388

Discussion by—

Dr. F. R. Taylor 390
Dr. Joseph A. Elliott 390

Eddleman, Dr. H. M. 219, 225
Election of Member of State Board of Nurses' Examiners 116
Elliott, Dr. Joseph A. 388, 390
Ethylene-Oxygen Anesthesia—*R. L. Wall, M. D.* 215

Discussion by—

Dr. H. H. Bass 219
Dr. H. M. Eddleman 219
Dr. R. L. Wall 219

Evacuation of Wounded with the British and Americans Contrasted, The—*Lt. Col. W. P. Herbert, M. D.* 243

Discussion by—

Major Glenn I. Jones 247, 250
Col. W. L. Dunn 249
Col. W. P. Herbert 249
Dr. E. C. Holden 249

Examination on Anatomy and Embryology—*L. A. Crowell, M. D.* 460
Examination on Histology, Bacteriology and Pathology—*C. A. Shore, M. D.* 459
Examination in Hygiene, Chemistry and Physiology—*Wm. W. Jones, M. D.* 460
Examination in Materia Medica, Therapeutics and Pharmacology—*J. G. Murphy, M. D.* 462
Examination in Obstetrics, Gynecology and Pediatrics—*K. P. B. Bonner, M. D.* 462
Examination on Practice of Medicine—*Wm. P. Holt, M. D.* 461
Examination on Surgery—*L. N. Glenn, M. D.* 461
Executive Staff of the State Board of Health 83

F

Felts, Dr. Robert L. 335, 338
Ferguson, Dr. R. T. 197, 215, 341, 343
Fifth District Medical Society, Eulogy 43
Financial Statement, 1924-1925 89
Frazer, Dr. Thompson 242

PAGE

Further Observation on Kidney and Bladder Stones with Special Reference to Recurrence—*C. O. DeLaney, M. D.* 464

Discussion by—

Dr. A. J. Crowell 468
Dr. L. A. Crowell 469
Dr. W. M. Coppridge 469
Dr. C. S. Lawrence 470

Future Study of the Possible Relationship of the Monilia Psilosis to Sprue and Pernicious Anemia—*Edward Jenner Wood, M. D.* 402

Discussion by—

Dr. J. M. Northington 407
Dr. P. P. McCain 407
Dr. L. G. Beall 408
Dr. K. C. Moore 408
Dr. D. R. Murchison 410
Dr. W. H. Sprunt 410
Dr. K. C. Moore 410
Dr. F. R. Taylor 410
Dr. Edward Jenner Wood 411

G

Garrison, Dr. D. A. 81
General Sessions 7, 19, 25
Gibbon, Dr. Robert L. 510
Gibson, Dr. M. R. 271, 274, 280, 300, 305, 307
Glenn, Dr. L. N. 461
Goode, Dr. T. V. 532
Gove, Dr. Anna M. 378, 387
Green, Dr. Thomas M. 493, 502
Greene, Dr. Joseph B. 275, 285
Guilford County Medical Society, Resolutions 47

H

Hanes, Dr. F. M. 372, 377
Hardin, Dr. E. R. 152, 329
Hart, Dr. V. K. 265, 273, 288, 301, 305
Has Alcohol a Place as a Therapeutic Agent?—*G. H. Macon, M. D.* 429

Discussion by—

Dr. A. A. Kent 431, 432
Dr. L. D. Wharton 432
Dr. J. F. McKay 432
Dr. A. J. Crowell 432, 433
Dr. D. S. Currie 433
Dr. G. H. Macon 433

Heart Irregularities as Related to Military Service—*Thompson Frazer, M. D.* 242
Herbert, Dr. W. P. 243, 249, 326
Hicks, Dr. V. M. 301, 307
Higgins, Dr. L. M. 281

PAGE
Highsmith, Dr. J. D. 492, 513, 522
Hines, Dr. E. R. 329
Holden, Dr. E. C. 249
Holt, Dr. Wm. P. 461
House of Delegates, Minutes of 84

I

Importance of a More Careful Diagnosis and Treatment of Minor Illness, The—*L. Jack Smith, M. D.* 119
Importance of X-ray in Gastro-Intestinal Disorders in Soldiers, The—*John D. MacRae, M. D.* 251
Increase of Mental Diseases, the Cause and Prevention, The—*P. V. Anderson, M. D.* 122
Discussion by—
Dr. L. Jack Smith 129
Dr. C. Banks McNairy 130
Dr. A. E. Bell 132
Dr. J. M. Templeton 134
Dr. P. V. Anderson 134
Indications for Tonsillectomy—*Joseph B. Greene, M. D.* 275
Discussion by—
Dr. H. A. Newell 280
Dr. M. R. Gibson 280
Dr. L. M. Higgins 281
Dr. Chas. R. Reaves 281
Dr. A. G. Woodard 281
Dr. W. P. Speas 282
Dr. O. C. Daniels 282
Dr. H. C. Willis 284
Dr. Jos. B. Greene 285
Installation of Officers 69
Intensive Professional Service—*Albert Anderson, M. D., President* 8
Intravenous Use of Mercurochrome in the Treatment of Some of the Diseases of Children, The—*Tom M. Watson, M. D.* 175
Discussion by—
Dr. K. C. Moore 180
Dr. S. P. Bass 181
Dr. Tom M. Watson 182
Invocation—*Rev. Elmer W. Serl* 7
Ireland, Major General M. W. 260

J

Johnson, Dr. W. M. 167
Johnston, Dr. J. G. 307
Jones, Major Glenn I., M. C., U. S. A. 228, 234, 235, 236, 247, 250, 259
Jones, Dr. W. M. 352, 460

K

PAGE
Kennedy, Dr. John P. 209, 225
Kent, Dr. A. A. 81, 420, 428, 431, 432, 487, 489
Kerr, Dr. J. E. 326
Knight, Dr. W. P. 327

L

Lafferty, Dr. R. H. 194
Laughinghouse, Dr. Chas. O'H. 45, 54
Lawrence, Dr. C. S. 470, 474, 483, 489, 532
Long, Dr. J. W. 18, 235, 259, 319, 327, 334, 480, 531, 542

M

Macon, Dr. G. H. 426, 429, 433
Malone, Dr. J. Y. 286
Mann, Dr. I. T. 49
Manning, I. H. 414, 419
Manning, Dr. John M. 225, 427
Marriott, Dr. McKim 166, 599
Matheson, Dr. James P. 265, 267, 274, 300
Medical Ethics, Principles of 569
Medical Examiners, Report of 456
Medical Journal: A Necessary Adjunct to the Surgeon and the Hospital, The —*James M. Northington, M. D.* 523
Medical Laws and Licensure, with Special Reference to Operation in North Carolina—*K. P. B. Bonner, M. D.* 55
Medical R. O. T. C. a Factor in the Solution of the Medical Economic Situation, The—*Col. Joseph Howell Way, M. D.* 252
Medical Reserve, The—*Major Glenn I. Jones, M. C., U. S. A.* 228
Discussion by—
Col. W. L. Dunn 234, 235
Dr. W. G. Byerly 234
Major Glenn I. Jones 234, 235, 236
Col. J. W. Long 235
Memorials—
Dr. Jasper N. Anderson 26
Dr. James Aaron Austin 26
Dr. William A. Bradsher 27
Dr. Needham B. Broughton 28
Dr. H. M. S. Cason 28
Dr. Thomas Graham Faulkner 29
Dr. Branch T. Fields 30
Dr. Marshall Hall Fletcher 30, 32
Dr. Richard A. Freeman 33
Dr. Elias Fulp 34
Dr. Arthur W. Greene 34
Dr. William H. Hardison 34

PAGE

Dr. William F. Hargrove ... 35
Dr. Charles W. Hunt ... 36
Dr. J. B. H. Knight ... 37
Dr. E. H. Lyon ... 37
Dr. Hector Lauchlin MacFayden ... 38
Dr. Gilbert McLeod ... 40, 41, 43
Dr. John Walter Page ... 44
Dr. L. J. Picot ... 44
Dr. A. M. Redfern ... 46
Dr. Harry C. Roberts ... 46
Dr. Henry B. Rowe ... 46
Dr. Floyd Caldwell Shugart ... 47, 48
Dr. Frederick L. Siler ... 49
Dr. M. R. Stephenson ... 50
Dr. J. H. Teague ... 50
Dr. H. M. Wilder ... 51
Dr. Joseph E. Wilson ... 51, 52

Midwives, Regulations Governing, in Beaufort County ... 147
Minor, Dr. Charles L. ... 351, 364, 370, 374, 376, 385
Minutes of the American College of Physicians ... 454
Minutes of the House of Delegates ... 84
President's Address—*Albert Anderson, M. D.* ... 86
Financial Statement ... 89
Mixed Obstructive and Perceptive Unilateral Deafness—*M. R. Gibson, M. D.* 271
Discussion by—
Dr. V. K. Hart ... 273
Dr. J. W. MacConnell ... 273
Dr. J. P. Matheson ... 274
Dr. M. R. Gibson ... 274
Moore, Dr. K. C. ... 168, 180, 362, 408, 410
Mudgett, Dr. W. C. ... 7, 8
Murchison, Dr. D. R. ... 410
Murphy, Dr. John G. ... 266, 428, 462
Myers, Dr. J. Q. ... 352
McBrayer, Dr. L. B. ... 18, 19, 33, 54, 89, 94, 351
McCain, Dr. P. P. ... 376, 387, 391, 399, 407
MacConnell, Dr. J. W. ... 273, 384
McGeachy, Dr. Robert S. ... 35, 82
McGehee, Dr. J. W. ... 330, 334
McKay, Dr. Hamilton W. ... 183
McKay, Dr. J. F. ... 432
McNairy, Dr. C. Banks ... 130
MacNider, Dr. William deB. ... 70, 351, 419, 424, 428
MacRae, Dr. J. D. ... 196, 251, 397

N

Nalle, Dr. Brodie C. ... 315, 320, 334, 419
Neal, Dr. Kemp P. ... 25, 46

PAGE
Newell, Dr. H. A. 280
Newman, Dr. H. H. 476
Noble, Dr. Robt. P. 301
North Carolina State Section of the American College of Surgeons 464
Northington, Dr. J. M. 407, 523

O

Obituaries, Report of Committee on 25
Obscure Fevers—*F. M. Hanes, M. D.* 372
Discussion by—
Dr. Charles L. Minor 374, 376
Dr. E. J. Wood 376
Dr. P. P. McCain 376
Dr. F. M. Hanes 377
Oliver, Dr. A. S. 442
On the Teaching Function of the Medical Profession as a Whole—*Frederick R. Taylor, M. D.* 352
Opening Exercises, Tuesday Morning, April 28, 1925 7
Osnato, Dr. Michael 237
Our Handicapped Children—*M. L. Townsend, M. D.* 140

P

Parrott, Dr. J. M. 33, 82
Personal Experiences with Focal Infections—*V. M. Hicks, M. D.* 301
Discussion by—
Dr. M. R. Gibson 305, 307
Dr. V. K. Hart 305
Dr. O. C. Daniels 306
Dr. V. M. Hicks 307
Dr. Henry L. Sloan 307
Dr. J. G. Johnston 307
Phillips, Dr. C. C. 194, 199, 201, 207
Pittman, Dr. R. L. 338, 341
Plan as Adopted by Beaufort County for the Control of Midwifery, The—*J. W. Williams, M. D.* 145
Discussion by—
Dr. L. A. Crowell 151
Dr. E. R. Hardin 152
Plan to Supply Physicians in the Rural Sections of the State (Using Rutherford County as an Example), A—*W. C. Bostic, M. D.* 356
Practical Application of Hydrotherapy, The—*John LaBruce Ward, M. D.* 169
Discussion by—
Dr. B. U. Brooks 174
Dr. John LaBruce Ward 174
Preliminary Consideration in Connection with Provisions of the Duke Foundation for Hospitals—*W. S. Rankin, M. D.* 525
President's Address—*Albert Anderson, M. D.* 8
Discussion by—
Dr. J. W. Long 18

PAGE
President's Message to House of Delegates 86
Principles of Medical Ethics of the American Medical Association 569
Pritchard, Dr. A. T. 198, 539
Proctor, Dr. I. M. 319, 337, 343
Program 1
Prostatism and Its Treatment with Radium and X-ray—*H. H. Bass, M. D.* 189
Discussion by—
Dr. C. M. Strong 196
Dr. J. D. MacRae 196
Dr. R. T. Ferguson 197
Dr. A. J. Crowell 197
Dr. A. T. Pritchard 198
Dr. C. C. Phillips 199, 201
Dr. H. H. Bass 200, 201
Psychoneuroses in Relation to Military Service—*Michael Osnato, M. D.* 237
Discussion by—
Dr. A. E. Bell 241
Col. W. L. Dunn 242
Pulmonary Syphilis—*P. P. McCain, M. D.* 391
Discussion by—
Dr. Wm. L. Dunn 396
Dr. J. D. MacRae 397
Dr. J. H. Woodcock 398
Dr. Jos. L. Spruill 398
Dr. M. L. Stevens 399
Dr. F. R. Taylor 399
Dr. P. P. McCain 399
Purinton, Dr. H. H. 188, 219, 226, 227
Purposes and Duties of the Section on Medicine—How Can We Best Fulfill Them, On the—*Chas. L. Minor, M. D.* 364
Discussion by—
Dr. E. J. Wood 370
Dr. Chas. L. Minor 370
Dr. F. R. Taylor 371
Dr. H. W. Chase 372
Pyelitis of Pregnancy—*Robert L. Felts, M. D.* 335
Discussion by—
Dr. C. D. Thompson 336
Dr. Claude B. Squires 337
Dr. J. W. Tankersley 337
Dr. L. A. Crowell 337
Dr. I. M. Proctor 337
Dr. Robert L. Felts 338

R

PAGE

Radiation Therapy of Non-Malignant Uterine Bleeding—*R. H. Lafferty, M. D.; C. C. Phillips, M. D.* 194
Discussion by—
Dr. C. M. Strong 196
Dr. J. D. MacRae 196
Dr. R. T. Ferguson 197
Dr. A. J. Crowell 197
Dr. A. T. Pritchard 198
Dr. C. C. Phillips 199
Dr. H. H. Bass 200
Dr. C. C. Phillips 201
Dr. H. H. Bass 201
Radical Operation for the Cure of Chronic Frontal Sinusitis—*J. B. Wright, M. D.* 264
Discussion by—
Dr. James P. Matheson 265
Dr. H. C. Willis 265
Dr. V. K. Hart 265
Dr. John G. Murphy 266
Dr. J. B. Wright 266, 267
Dr. James P. Matheson 267
Radical Operation for Carcinoma of the Breast by Stewart's Incision—*D. T. Tayloe, M. D.* 476
Discussion by—
Dr. W. M. Scruggs 479
Dr. J. W. Long 480
Dr. C. M. Strong 480
Dr. S. O. Black 480
Rankin, Dr. W. S. 71, 82, 153, 525
Reaves, Dr. Chas. R. 281
Regulations Governing Midwives in Beaufort County 147
Relation Between Surgeon and Internist—*A. T. Pritchard, M. D.* 539
Relation of the Physician to the Public, and Vice Versa—*C. M. Van Poole, M. D.* 19
Relation of the State Board of Health to North Carolina Hospitals—*J. Howell Way, M. D.* 527
Relation of the Surgeon to the Roentgenologist, Pathologist and Follow-Up Record, The—*G. Carlyle Cooke, M. D.* 470
Discussion by—
Dr. A. M. Whisnant 474
Dr. F. C. Hubbard 474
Dr. A. J. Crowell 474
Dr. C. S. Lawrence 474
Dr. H. H. Newman 476
Report of a Case of Sarcoma of Testicle—*C. M. Strong, M. D.* 481
Discussion by—
Dr. L. A. Crowell 482
Dr. C. M. Strong 483

PAGE
Report of Board of Councilors 94, 116
Report of Committee on Obituaries 25
Report of Delegates to American Medical Association 111
Report of an Interesting Head Injury Case—*Russell S. Beam, M. D.* 490
Discussion by—
Dr. J. D. Highsmith 492
Dr. Thomas M. Green 493
Dr. Horace M. Baker 494
Dr. A. E. Bell 495
Report of House of Delegates 69
Report of the Board of Medical Examiners of the State of North Carolina—*K. P. B. Bonner, M. D., Secretary* 456
Resolutions Adopted by the Guilford County Medical Society 47
Resolution—Committee on Arrangements 70
Review of the Metabolism of the Carbohydrates, A—*I. H. Manning, M. D.* 414
Discussion by—
Dr. Wm. Allan 418
Dr. B. C. Nalle 419
Dr. Wm. deB. MacNider 419
Dr. I. H. Manning 419
Roberson, Dr. Foy 495, 503, 504
Ross, Dr. George H. 320, 330
Roster of Members for 1925, by Counties 630
Royster, Dr. H. A. 205, 208
Ruptured Ulcer of the Stomach—*G. B. Crowell, M. D.* 508
Discussion by—
Dr. Robert L. Gibbon 510
Dr. B. C. Willis 512
Dr. L. A. Crowell 512

S

Sacral Nerve Block Anesthesia in Surgery and Urology—*J. D. Highsmith, M. D.* 513
Discussion by—
Dr. William Sprunt 520
Dr. J. D. Highsmith 522
Safeguards to Cataract Extraction—*Henry L. Sloan, M. D.* 261
Scientific Papers 117
Scruggs, Dr. W. M. 479, 486, 503
Section on Chemistry, Materia Medica and Therapeutics—*Henry L. Cook, M. D., Chairman* 414
Section on Eye, Ear, Nose and Throat—*Henry L. Sloan, M. D., Chariman* 261
Section on Gynecology and Obstetrics—*Brodie C. Nalle, M. D., Chariman* 315
Section of Medical Veterans of the World War and Medical Officers' Reserve Corps—*Col. W. L. Dunn, M. D., Chairman* 228
Section on Pediatrics—*Leroy J. Butler, M. D., Chairman* 157
Section on Practice of Medicine—*Frederick R. Taylor, M. D., Chairman* 348
Chairman's Address 352

PAGE
Section on Public Health and Education—*L. Jack Smith, M. D., Chairman* 119
Section on Surgery—*H. H. Bass, M. D., Chairman* 183
Chairman's Address 189
Serl, Rev. Elmer W. 7
Sherrill, Dr. C. L. 344
Shore, Dr. C. A. 459
Shull, Dr. J. Rush 400
Sidbury, Dr. J. Buren 167
Simple Mastoid with Sinus Thrombosis and Brain Abscess as Complications—*Harry C. Willis, M. D.* 268
Discussion by—
Dr. R. V. Brawley 270
Dr. Harry C. Willis 270
Sloan, Dr. Henry L. 261, 307
Smith, Dr. J. H. 352
Smith, Dr. L. Jack 119, 129
Some Aspects of Rickets—*Leroy J. Butler, M. D.* 157
Some Considerations on the Doctrine of Focal Infection—*Hiram Woods, M. D.* 308
Some Fundamentals in the Diagnosis and Treatment of Thyroid Diseases—*Foy Roberson, M. D.* 495
Discussion by—
Dr. William Sprunt 499
Dr. S. O. Black 501
Dr. Thomas M. Green 502
Dr. W. M. Scruggs 503
Dr. Foy Roberson 503, 504
Some Health Problems in a Woman's College—*Anna M. Gove, M. D.* 378
Discussion by—
Dr. J. W. MacConnell 384
Dr. Charles L. Minor 385
Dr. P. P. McCain 387
Dr. Anna M. Gove 387
Some New Ideas Concerning the Medical Inspection of School Children—*W. S. Rankin, M. D.* 153
Some Newer Viewpoints Concerning the Nature and Treatment of Nephritis—*McKim Marriott, M. D.* 599
Some Observations on the Intravenous Use of Mercurochrome—*T. V. Goode, M. D.* 532
Some Phases of the Acute Surgical Abdomen—*Numa D. Bitting, M. D.* 536
Some Points in the Differential Diagnosis of Abdominal Conditions—*John P. Kennedy, M. D.* 209
Discussion by—
Dr. R. T. Ferguson 215
Some Underlying Principles in Endocrinology—*A. S. Oliver, M. D.* 442
Speas, Dr. W. P. 282
Spicer, Dr. Richard W. 328
Spruill, Dr. Jos. L. 398

PAGE
Sprunt, Dr. W. H. 410, 499, 520
Squires, Dr. Claude B. 183, 189, 337
Standing Rules of the House of Delegates of the American Medical Association 596
State Board of Health, Conjoint Session 71
Executive Staff 83
Sterility, and Demonstration of Simplified Apparatus for Testing the Patency of the Fallopian Tubes—*Robert T. Ferguson, M. D.* 341
Discussion by—
Dr. G. A. Caton 343
Dr. I. M. Proctor 343
Dr. Robert T. Ferguson 343
Stevens, Dr. M. L. 399
Strong, Dr. C. M. 196, 226, 480, 481, 483
Study of Chemical Hydrochloric Acid, Especially as to Its Pharmacological Action and Therapeutic Uses, A—*S. M. Bittinger, M. D.* 434
Sweaney, Dr. John 227
Synergistic Analgesia in Childbirth—*C. L. Sherrill, M. D.* 344

T

Tankersley, Dr. J. W. 332, 337, 504
Tayloe, Dr. D. T. 476
Taylor, Dr. Frederick R. 348, 351, 352, 371, 390, 399, 410
Taylor, Dr. James T. 334
Templeton, Dr. J. M. 134
Tenth District Medical Society 49
Tetanus—*H. H. Purinton, M. D.* 219
Discussion by—
Dr. John M. Manning 225
Dr. John P. Kennedy 225
Dr. H. M. Eddleman 225
Dr. C. M. Strong 226
Dr. H. H. Purinton 226, 227
Dr. John Sweaney 227
Therapeutic Uses of Aconite and Veratrum Viride—*A. A. Kent, M. D.* 420
Discussion by—
Dr. Henry L. Cook 424
Dr. Wm. deB. MacNider 424
Dr. G. H. Macon 426
Dr. Dr. K. G. Averitt 427
Dr. John M. Manning 427
Dr. Rigdon O. Dees 427
Dr. D. S. Currie 427
Dr. J. G. Murphy 428
Dr. Wm. deB. MacNider 428
Dr. A. A. Kent 428
Thompson, Dr. Cyrus 28, 34, 69, 81, 135
Thompson, Dr. C. D. 336

PAGE
Tobacco and Eighth Nerve Lesions—*V. K. Hart, M. D.* 288
Discussion by—
Dr. A. M. Whisnant 300
Dr. J. P. Matheson 300
Dr. M. R. Gibson 300
Dr. Robt. P. Noble 301
Dr. V. K. Hart 301
Townsend, Dr. M. L. 140
Treatment of Pyelitis from the General Practitioner's Point of View, The—*K. C. Moore, M. D.* 362

U

University Extension Work in Medicine—*H. W. Chase, Ph. D., LL. D.* 348
Discussion by—
Dr. A. Anderson 351
Dr. H. W. Chase 351
Dr. L. B. McBrayer 351
Dr. Wm. deB. MacNider 351
Dr. Chas. L. Minor 351
Dr. F. R. Taylor 351
Dr. W. M. Jones 352
Dr. J. H. Smith 352
Dr. J. Q. Myers 352
Use of Morphin-Scopolamin Anesthesia in Ophthalmic Surgery, The—*J. Y. Malone, M. D.* 286

V

Value of Observation and Experience as Applied to the Art of Living, The—*Cyrus Thompson, M. D.* 135
Van Poole, Dr. C. M. 19

W

Wall, Dr. R. L. 215, 219
War Department, Office of the Surgeon-General—Letter 259
Ward, Dr. John LaBruce 169, 174
Watson, Dr. Tom M. 175, 182
Way, Dr. J. Howell 38, 52, 71, 82, 252, 259, 527
Wharton, Dr. L. D. 432
When and Why Remove the Cervix During Hysterectomy for Benign Disease of the Uterus—*R. L. Pittman, M. D.* 338
Discussion by—
Dr. J. T. Burrus 340
Dr. R. L. Pittman 341
Whisnant, Dr. A. M. 300, 470, 474, 531
Williams, Dr. J. W. 145, 325
Willis, Dr. Byrd Charles 202, 208, 209, 333, 512
Willis, Dr. H. C. 265, 268, 270, 284

PAGE
Woman's Auxiliary 451
List of Charter Members 452
Roster of Members 453
Wood, Dr. Edward Jenner 370, 376, 402, 411
Woodard, Dr. A. G. 281
Woodcock, Dr. J. H. 398
Woods, Dr. Hiram 308
Woodward, Dr. Wm. C. 108
Wright, Dr. J. B. 264, 266, 267

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

FIFTEENTH ANNUAL SESSION

PINEHURST, N. C.

MONDAY. APRIL 27, 1925

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

FIFTEENTH ANNUAL SESSION

PINEHURST, MONDAY, APRIL 27, 1925

The North Carolina Public Health Association met in the ball room of the Carolina Hotel, Pinehurst, at ten A. M., and was called to order by the President, Dr. L. L. Williams.

The invocation was pronounced by the Rev. T. A. Cheatham, D. D., of Pinehurst.

PRESIDENT'S ADDRESS

THE DEVELOPMENT OF RURAL HEALTH WORK IN NORTH CAROLINA AND ITS FUTURE

L. L. Williams, M. D.

In considering what subject might most profitably be considered upon this occasion, it occurred to me that a general review of public health activity in this State with some remarks concerning the most promising prospects for the future might not be without benefit.

I will, therefore, endeavor to trace the growth of organized public health work in North Carolina; how it commenced, by what influences it has been stimulated and by what agencies the betterment of conditions has been effected; with the hope that looking on our work from a historical point of view we may better appreciate the importance of what has been done and in the future may profit by the experiences of the past. At the same time we should, of course, bear in mind that our future policies should be influenced not only by our own experience but also by the work of other areas which have to deal with similar problems.

The North Carolina State Board of Health was established in 1877 through the foresight and untiring efforts of Dr. Thomas Fanning Wood, of Wilmington, who had the distinction of being the first secretary, being elected in 1879.

Dr. Wood died in 1882 and was succeeded by Dr. Richard H. Lewis.

The first educational pamphlet was issued by the Board in 1878, the subject being: "The timely aid for the drowned and suffocated." The State Health Bulletin made its appearance in April, 1886, edited by Richard H. Lewis, of Raleigh.

In 1894, Doctors Albert Anderson and W. T. Pate were elected bacteriologists for the Board. The State Laboratory of Hygiene was established in 1905. In 1906, the North Carolina State Association for the study and prevention of tuberculosis was organized and in 1907 the State Sanatorium for tuberculosis was founded. In 1908, Dr. C. A. Shore became Director of the State Laboratory of Hygiene. In 1909 the General Assembly provided for a whole time State Health Officer at which time Dr. Richard H. Lewis resigned as Secretary of the Board and Dr. W. S. Rankin was elected as his successor, taking charge of work officially on July 1st, 1909, with an appropriation of $10,500. Dr. John A. Ferrell was selected in February, 1910, as assistant director for hookworm eradication. County boards of health were established in 1911. The model vital statistics law was passed in 1913 and the Bureau of County Health Work established in 1915, with Dr. G. M. Cooper as director.

The State Board of Health has continued to grow and expand from year to year with the establishment of other bureaus as its duties were increased and its powers broadened. In 1877 it had an appropriation of $100. During the present year the budget is $455,000, or about 16½ cents per capita. The remarkable progress of the last fifteen years has been due largely to the extraordinary energy and administrative ability of Dr. Rankin. As a result of the successful organization of health work in rural areas by Dr. Rankin, North Carolina has come to be looked upon as the most progressive State in matters of public health.

County or rural health organizations are rather new in the public health field, having been developed in the past few years. It is of particular interest to know that the first county organization to be established in this country was in the State of North Carolina, when Guilford County, in 1911, appropriated money for and established a full time County Health Department. However, other states realized quickly the importance of rural health work which has grown to the extent wherein it has become very popular, as evidenced by the great increase of full time county units. On January 1st, 1924, there were 250 counties distributed throughout 35 states that had whole time health departments. The popularity and growth of the county unit in North Carolina has been great and rapid. In 1911, four counties established whole time departments and today there are thirty-five. During 1910, the hookworm eradication work began and, as a consequence, a strong sentiment soon began to make itself felt for better health work by the counties. Also it was realized that in order to maintain what had been accomplished through the combined efforts of the State and the Rockefeller Sanitary Commission it was necessary to establish some form of a local working unit on a permanent basis; and the county organization was rightly conceived to be the most logical. As time went on it proved to be very satisfactory and each year it has become more popular until its functions were extended into the broader problems of public health. Today rural health work is the main

spoke of a great wheel, possessed with scientific knowledge, traveling through the sparsely populated area and applying the principles of preventive medicine among those individuals who are to a certain extent deprived of medical services and protection against the ravages of diseases in endemic and epidemic forms. The hub of this great wheel—The State Board of Health, acts as a pivot to these functioning organizations coöperating and coördinating in an advisory capacity and by means of financial aid. Through the analysis of the results accomplished by these rural departments various other agencies in the public health field have decided to support the rural health departments, deeming it the best means of accomplishing their primary objects. Such organizations are the United States Public Health Service, the National Tuberculosis Association and the National Child Health Council.

With a full appreciation of the efforts of the State and local health departments in the fight against other diseases, it is true that the bulk of our energy and effort of the past fifteen years has been spent on the control of hookworm and typhoid fever. To the results of this work we may point with justifiable pride. In the period 1910-1922 hookworm infection has been reduced in this State by 75 per cent. Who can measure the benefit of this work to the individual, to industry or to the State? Or consider typhoid fever. If the typhoid mortality rates of 1911 (approximately 70 per 100,000) had continued to the present day, many of us would not be present at this meeting. In those days the chance of an individual contracting typhoid during his lifetime was probably greater than one in five, whereas today the risk is less than one in thirty.

The reduction in these two diseases may well be taken as an index of the success of public health work in this State, and although I would not advocate any relaxation of effort while these diseases remain appreciable factors in our mortality, yet the present would seem to be a fitting time to study the lessons to be learned from our experience. Our successes in one direction, may perhaps be applied profitably in another.

The time would seem to have come for us to take stock; to consider our assets and our liabilities. Let us weigh our scientific knowledge, our experience and that of others, and our budget on the one hand, against the problems of disease and death with which we are faced.

The first fact which occurs to me is that both diseases of which I have spoken are diseases in which infection is spread by means of the discharges of the intestinal tract. Further the experience of health officials everywhere has shown that such diseases are easier to control than diseases spread by discharges from the nose or throat. If, therefore, there are other intestinal diseases it would seem reasonable that an attack on them would be the venture most likely to be crowned with success.

A necessary preliminary to organized public health work is statistics of some sort. The better the statistics the more direct

will be the attack and the less the money that will be wasted. Now in this State we must congratulate ourselves on the greatly improved character of our vital statistics. Our statistics of morbidity I think, however, could be greatly improved. For example, in typhoid fever, in 1923 we had 1577 cases reported with 267 deaths, a case fatality of 17 per cent. Now, while opinions may differ, it is probable that the true case fatality was in the neighborhood of 10 per cent. If this be the case, there were in North Carolina in 1923 more than one thousand cases of typhoid which were not reported.

A very cursory study of our mortality statistics, however, is sufficient to indicate that we have an appalling death rate among children under one year of age. In North Carolina in 1922 we had 6510 deaths in children of this age group. This number is one-fifth of our total deaths for that year.

Now it is a sound principle that if a death rate varies greatly as between different States or between different sections of one State, that death rate is in all probability subject to control. Pearl has shown that if you study the infant mortality rates among the colored population of different sections you will find a tremendous difference in different areas. The extremes which he noted in the colored are much more striking than in the white. Further, as a general rule, he found that small cities vary the most in this respect, some small cities having very low and others very high infant mortality rates. Large cities show a great deal less variation than do rural areas.

This difference between urban and rural sections may be illustrated by data of our own State. In 1915 the urban infant mortality rate was 103 per 1000 births, as compared with 94 for the rural districts. In 1921, however, the position is reversed and the urban rate is slightly lower than that of the country. The point is that the city containing people biologically the same as the country, has succeeded in lowering its infant mortality whereas the rural districts, comparatively speaking, have failed.

To digress for a moment it may be stated that as far back as 1662, Captain John Graunt, in his Bill of Mortality, noted the relatively high rates in the early years of life and also the fact that the cities had higher death rates than rural areas. We have always been taught that country life is the healthy life. Present indications, however, point to a reversal in favor of the city dweller, not only with respect to infant mortality but also in typhoid, diphtheria and other diseases.

Now of the various factors which make up our infant mortality that factor which is itself the most variable is infant diarrhoea. Nichols has shown in New York State that where differences in infant mortality occur as between New York City, the smaller cities, and the remainder of the State, the factor which is less or greater is diarrhoea. Here is a disease, therefore or a combination of diseases which from the point of view of the experience of our own

State in dealing with intestinal diseases, and which is shown by statistics to be the most variable factor in infant mortality should be the easiest to control. Further it is true that communities which have scientifically attacked the problem have had strikingly satisfactory results.

In New York City, for example, where active measures have been instituted, the death rate from diarrhoea and enteritis in 1922 was 13.4 per 1000 births, while that for North Carolina was 19.2. Now while I think it hardly fair to compare North Carolina with its large negro population with New York City, yet I do submit that a determined effort, scientifically conducted, to lower the death rate from diarrhoea and enteritis would bring results which we can anticipate from few of our activities.

Davison, as a result of many years work on this subject at the Johns Hopkins Hospital, has shown that a large percentage of these deaths from diarrhoea are really due to dysentery, caused by the Flexner type of organism. He states that any condition in children, characterized by a sudden febrile onset, followed within a few hours by diarrhoea and within three days by the appearance of blood in the stools, has with few exceptions been proven to be bacillary dysentery. Flexner dysentery in adults on the other hand is frequently aferbrile, with a non-bloody and non-mucous diarrhoea, of 24 hours duration. The failure to recognize these adult cases is responsible for the majority of infections in children. In adults the mortality from this form of dysentery is negligible while in infants under one year it may reach 50 per cent in hospital cases. Davison recommends four points upon which all mothers should be instructed. These instructions consist in:

1. The thorough washing of the mother's hands with soap and water every time she has been in contact with the patient or his excreta or whenever she handles food for other children.

2. The keeping of the patient's excreta and soiled clothing in covered buckets containing soap powder and water until they can be boiled.

3. The use of mosquito nets for the patient and any children in the household to prevent the access of flies.

4. The boiling, in their final containers of all milk or milk mixtures that are fed to any infants under 2 years of age. This is accomplished by dividing the milk or milk mixture for the whole day into the requisite number of feedings. Each feeding should be poured into a clean nursing bottle. This should be plugged with non-absorbent cotton. All of the bottles should then be placed in a pan of cold water which should be heated to the boiling point and held there ten minutes. These boiled bottles of milk should then be kept on ice until needed.

I do not mean to state that all of our diarrhoeas of infancy are dysenteric in origin, but it is reasonably certain that a considerable proportion of our cases are, and it behooves us to endeavor to secure reports of these cases, to study them epidemiologically and to apply

such means of prevention as seem rational and which have proven successful in other localities.

In conclusion, it should be said that infant diarrhoea is only one of many problems which might well be chosen for intensive and concerted effort at control. It has been suggested because of its definiteness, its scientific interest and its promise of demonstrable results. Whatever program of work is selected by the rural health officer, however, he should recognize that success depends upon accurate knowledge of the scientific facts involved, intelligent planning of work and persistent endeavor in the field; coupled with all these should go an earnest effort to secure, tabulate and study such facts as will enable us to form a reliable judgment as to just what has been accomplished. The sound development of public health work will rest in the future less upon the zeal of the crusader than upon the careful measurements of the student.

REPORT OF THE SECRETARY

The Fourteenth Annual Session of this Association was held in Raleigh, Monday, April 14, 1924, at the Sir Walter Hotel. The meeting was opened with an excellent address by our President, Dr. C. W. Armstrong. The officers for this meeting were:

Dr. C. W. Armstrong, President;
Dr. L. L. Williams, Vice-President;
Dr. F. M. Register, Secretary.

The meeting of the Association was a most enthusiastic and helpful one. We were fortunate in having as the main speaker at the evening session, Dr. John A. Ferrell, Director for the United States of the International Health Board, the Rockefeller Foundation, a North Carolinian, who gave us a most interesting address.

The committees appointed were as follows:

Committee on Visitors and New Members: Dr. W. A. McPhaul, Charlotte; Dr. E. T. Hollingsworth, Clinton; Dr. Floyd Johnson, Whiteville.

Committee on Resolutions: Dr. L. J. Smith, Wilson; Dr. P. G. Parker, Jackson; Dr. C. L. Outland, Greenville.

Committee on President's Address: Dr. R. S. McGeachy, Kinston; Dr. Sidney E. Buchanan, Concord; Dr. A. C. Bulla, Raleigh.

At the evening session the following officers were elected:

President: Dr. L. L. Williams,
Vice-President: Dr. Sidney L. Buchanan,
Secretary: Dr. F. M. Register.

F. M. Register, M. D.,
Secretary.

Dr. Register: I have here a letter from the Motion Picture Producers and Distributors of America, Inc., which I should like to read. Then, if it meets with your approval, I would suggest that our president appoint a committee to co-operate in the way suggested in the letter.

MOTION PICTURE PRODUCERS & DISTRIBUTORS OF AMERICA, INC.
469 Fifth Avenue
New York City

April 22, 1925.

Dr. F. M. Register, Secretary,
N. C. Public Health Association,
Releigh, N. C.

My Dear Dr. Register:—

Will H. Hays, President of our Association, has recently established a Department of Public Relations, which invites all of the interested public represented nationally, locally, and as individuals, to maintain a constant contact with the motion picture industry through the facilities thus offered.

At your meeting in Pinehurst, on April 27th, won't you officially appoint a representative who may be the point of contact between the North Carolina Public Health Association and the motion picture industry?

If there are questions in your mind concerning this important matter, or if the subject is apt to be discussed at your meeting, please communicate with me, so that I may give you full information concerning it.

The new arrangement which has been instituted by the Association is an "Open Door," which will always be available to the public, and will make certain that any group or any individual interested in the efforts for better pictures will have an opportunity to aid constructively. It insures the broadening and making permanent of constructive co-operation between the industry and that part of the public interested in better pictures.

I hope you will let me have the benefit of your advice and judgment in this whole matter, and will officially designate someone who will make constant use of this Department.

Sincerely yours,

(Signed) JASON S. JOY,

Director Department of Public Relations.

The following committees were appointed by the President:

Visitors and New Members: Dr. R. L. Carlton, Winston-Salem; Dr. E. T. Hollingsworth, Clinton; Dr. W. T. Ruark, Elizabethtown.

Resolutions: Dr. S. L. Buchanan, Concord; Dr. C. L. Outland, Greenville; Dr. A. C. Bulla, Raleigh.

Moving Pictures: Dr. L. J. Smith, Wilson; Dr. C. W. Armstrong, Salisbury; Dr. W. A. McPhaul, Charlotte.

Dr. S. L. Buchanan, Vice-President, appointed the following committee on the President's address: Dr. E. H. Hand, Pineville; Dr. W. A. McPhaul, Charlotte; Dr. R. L. Carlton, Winston-Salem.

INTESTINAL PARASITISM AND CHRONIC PALUDISM

W. T. Ruark, M. D., Elizabethtown

Subjects infected with paludism under the same conditions as regards environment, climate, and habits of life and treated in the same manner, may react differently; in some cases recovery ensues,

in other the condition becomes chronic. The degree of chronicity does not appear to depend upon the infective plasmodium. Gametes may occasionally persist, and reinitiate the asexual cycle. They are, however, not the usual causes of recurrence. The chronicity does not depend upon the constitutional condition of the patient previous to the infection. Climate, environment and economic conditions play only a secondary role. The factors favoring chronicity appear to be extrinsic, and are not always permanent and definite. For this reason chronic cases of paludism may respond to medication which is entirely ineffective in other cases.

It has been observed that, in paludism, every recurrence is preceded by a disturbance in the cellular constitution, resulting in disappearance of the erythrocytes from the peripheral circulation which remain impermeable to the parasite for a time, while the latter are vegetating in the deep organs. The cause of the chronicity and of recurrences is probably found in any factors capable of injuring the red-cells.

Patients suffering from recurrent malaria rarely present large spleens; this may be due to routine quinine treatment.

In order to determine the relation between intestinal parasitism and recurrences of paludism, the feces of 84 malaria patients were examined. Of 52 cases in which the chronicity was demonstrated by the clinical findings and by microscopical examination of the blood, 34 presented *Trichocephalus* in the feces, 7 *Ascaris,* 5 both these organisms, 1 *Dipylidium cancinum,* and 1 dysenteric amebae. The percentage of parasitism was therefore 92%. In 28 cases of primary paludism, or of reinfection, 10 presented *Trichecephalus* in the feces, 4 *Ascaris,* and 1 dysenteric amebae. The percentage of intestinal parasitism was 54%. In 4 cases in which the diagnosis of paludism was later found to be incorrect, 1 presented *Trichocephalus* in the feces; the percentage was therefore 25%.

These findings indicate the frequency of intestinal parasitism, and especially of *Trichocephalus* infestation, in paludism, notably in chronic cases. The number of eggs of the parasites found in the feces in chronic cases was greater than in other cases.

The first implication of these findings would be that paludism predisposes to intestinal parasitism, by decreasing the natural defenses (anemia, poor digestion), and is observed in otherwise normal cases, and the parasites do not appear to require an especially favorable medium of growth. Furthermore, the incidence of intestinal parasitism in primary cases of paludism, and antedating the latter infection, tends to disprove this assumption. It may, on the other hand, be assumed that intestinal parasitism predisposes to chronicity. The *Trichocephalus* feeds upon chyle and blood, and secretes toxic substances, which may lead to anemia. The red blood-cells are most vulnerable, and are therefore a favorable medium for the multiplication of the hematozoons. Intestinal infestation apparently predisposes not only to chronicity, but also to the primary infection.

These findings suggest a guide to the treatment of paludism by elimination of intestinal infection. The authors administered 4 gm. of thymol per day, for three successive days, followed by a purgative in each case. The results were not striking. Chloroform has also been employed, in the proportions of 3 gm. chloroform, 30 gm. of ricinus oil, and sufficient gum arabic to make an emulsion with 200 c.c. of water. This mixture is given internally while the patient is fasting, in 2 doses, half an hour apart, followed by 30 gm. of sodium sulphate. These two remedies should be alternated over long periods. If persisted in, this treatment results in elimination of the parasites, with consequent improvement in the general condition of the patient. Appetite is improved, the blood formula is rapidly ameliorated, the subnormal temperature, with exacerbations, becomes equalized. This treatment should be carried out in conjunction with the specific quinine treatment, and with tonics containing iron and arsenic.

A CASE OF CONGENITAL MALARIA OCCURING IN ENGLAND

As some divergence of opinion still exists on the possibility of direct transmission of malaria from the mother to the child, an account of a case which occurred in England may be of interest.

A review of the literature shows that while direct transmission is apparently possible it is a very rare occurrence. The case in which there is little doubt that it was one of direct transmission is as follows:

The mother, who had returned to England from a visit to the continent, and had never been further east than Venice, gave a history of irregular attacks of fever during the last two months of pregnancy. The diagnosis in this case was somewhat obscured by the fact that there was a marked bacilluria with some of the symptoms attending that condition. On the day after a full-term child was born the mother's temperature rose to 104° and splenic enlargement up to three fingers-breadth was present. On examination of the peripheral blood a fairly heavy infection of benign tertian parasites was found. The temperature of the child remained within normal limits until the sixteenth day, when it rose to 104.8°, there was a marked icteric coleration of the skin, and on examination of the finger blood a heavy infection of benign tertian parasites was seen. Numerous gametocytes were present, as many as four being found in one field. Both the patients responded satisfactorily to quinine.

This case occurred in Buckinghamshire, and the authors are not aware of the presence of any anapheles in this particular locality. Although in the case of trypanosomiasis there is a possibility of infection of the child through the milk, it seems unlikely that infection in this case took place in this way, and judging by the time required for the development of the numerous gametocytes present the most obvious assumption is that this is a case of congenital malaria.

FIVE CASES OF ASSOCIATE MALARIA-MELITENSIS INFECTION

Mixed bacterial infection may be observed (typhoid-melitensis) and also associated infection due to protozoa and bacteria (internal

leishmaniasis and melitensis, and typhoid-malaria). Lo Presto-Seminerio reports 5 cases of combined malaria and melitensis infection. All the patients were adults, although both these conditions may also affect infants. The diagnosis may be established by means of laboratory tests. However, inasmuch as a routine quinin treatment is frequently administered early in the course of the fever, and results in the disappearance of the malaria parasites from the peripheral blood, the diagnosis is not always clear. Serodiagnosis is of great value in the identification of melitensis infection. The agglutination should be distinct. The irregularity of the fever curve is evidence of mixed infection, and is an indication for quinin therapy. Cytologic examination of the blood is also of value; decrease in the number of red-cells, white cells, and of the hemoglobin content is a constant finding. Neutrophil polynuclears are scarce, and mononucleosis predominates. However, in one of the cases cited, the mononucleosis was not marked, at the expense of the lymphocytes. There was even a slight increase in the neutrophil polynuclears, and the leukocyte count was slightly increased.

The quinin treatment should be begun early, and should be continued persistently for a prolonged period. Aside from the effect upon the parasites, the quinin exerts an inhibitory effect upon the fever, so that the curve becomes lower and more uniform. The melitensis infection may be treated by means of proteinotherapy and of vaccinotherapy.

A typical case is cited. The patient had suffered from angiocolic for several years with icterus and fever. The liver was enlarged, the spleen was palpable and enlarged. Low-grade fever appeared, without definite character, and icterus recurred. The urine contained albumin, abundant biliary pigments, urobilin, large amounts of cylindroids, and renal elements. The symptoms disappeared gradually, except that the fever remained irregular, with sudden exacerbations followed by profuse sweating. The patient lived in a malarial zone, and had previously suffered from the disease. The serodiagnosis was positive, 1:200, for *Micrococcus melitensis*, and the blood contained malarial parasites (benign tertian type). The red-cell count was 3,200,000; the leukocyte count was 5,800; hemoglobin was present to 0.7%: the polynuclear neutrophils constituted 61.7%, the eosinophils 0%, the lymphocytes 20.9%, the large and small mononuclears 12.6%, transitional forms 4.7%.

Methylene-blue and quinin were injected, and established the normality of the renal function, and checked the malarial fever course. The fever points decreased, and the curve became characteristic of melitensis infection. The hepatic enlargement decreased, but the splenic tumor remained unchanged.

MASKED MALARIA FOLLOWING MALARIA TREATMENTS IN PROGRESSIVE PARALYSIS, AND POSSIBLE RELATIONSHIP BETWEEN EPILEPSY AND MALARIA

A woman suffering from neurosyphilis was treated by malaria inoculations, followed by quinin and intravenous injections of neosalvarsan. The picture was that of the incipient stage of progressive paralysis, manifested by epileptic attacks, slight disturbances of intelligence and memory, slight speech defects, reflex pupillary rigidity, positive serum and cerebrospinal fluid findings. Piercing pains and slight sensory disturbances had been present for years. Following the malaria course of 6 typical tertian attacks, and the quinin and neosalvarsan treatment, the fever ceased. However, sever stupor, typical of tertian malaria, occurred. The attacks recurred periodically, with intervals of remission. The attacks appeared to correspond to the previous malaria attacks. Blood withdrawn during the stuporous period contained isolated young forms of plasmodiae. Following a repetition of the quinin and salvarsan therapy the stuporous periods became shorter and finally disappeared. Recovery ensued. The patient became free from physical and mental symptoms, and presented a somewhat euphoric tendency.

These masked malarial periods of fever have been observed in various nervous disturbances, such as trigeminal neuralgia, spinal paraplegia, epilepsy, and malarial psychosis. This occurrence has not been previously noted following therapeutic inoculation of malaria organisms. Kraepelin explains the occurrence of nervous involvement, during masked inoculation malaria, by mass invasion of the brain by the plasmodiae. However, this would not explain the occurrence of nervous symptoms in some cases and their absence in others, unless special predispostion can be assumed in the former instances. At any rate, the usual dose of quinin (3 gr.) is inadequate to prevent recurrences of malaria. It is advisable to give not less than 5 gr. of the drug.

Several cases have been observed in which malaria was followed by epilepsy, in the absence of any demonstrable hereditary familial predisposition to account for the occurrence of epilepsy. In the case of adults, there is always the possibility that an epileptic disposition is present, and that the malaria is merely the activating factor. The malaria plasmodiae may become localized in various foci; those attacking the cerebral substance might cause epilepsy. In the case of children, the reaction to infection may be eclamptic, inasmuch as in these cases the tendency to convulsions is greater than in the case of adults. Whatever the cause of the attacks may be, epileptic convulsions frequently replace the periodic attacks of marked malaria, and are probably due to the infection, and, in most cases, not to predisposition.

Actual cellular changes may occur in the brain, due to the action of the plasmodiae. Griesenger suggested the production of pigment emboli, with obstruction of the capillaries, as the under-

lying cause. Other microscopical changes have been observed, such as infiltrations of the meninges and vascular sheaths with hematogenous cells, proliferation of the vascular endothelium, glial proliferation with neuronophagia, and malaria granulomata. After the epilepsy is established, antimalaria treatment is of little avail.

MALARIA AND ARTICULAR RHEUMATISM

Malaria and acute articular rheumatism present several points in common, such as their periodicity, tendency to appear in low, damp localities, their activation by slight exogenous factors, their long duration, and their response to specific agents, *i. e.,* quinin and salicylates, respectively. Both conditions have a definite connection with humidity of the air and soil.

Pulling pains in the muscles, dull pain in the knees, pressure pain in the tibia, and especially pain in the sacral and lumbar vertebrae, are common accompaniments of acute malaria. However, few cases of polyarthritis complicating malaria have been observed in conjunction with malaria in India. Verneuill attributes the pain to articular neuralgia due to the malaria. The response of the articular pain to quinin is sufficient proof of the malarial nature of the disturbances.

Lichtenstein observed 21 cases in which the polyarthritis occurred during the acute florid stage of malaria, and 18 in which it occurred during the convalescent stage. In 3 cases of the first group, the polyarthritis appeared on the fourteenth day of the malaria; the malaria fever curve was modified by the typical polyarthritis continuing, and neither quinin nor salicylates affected the course of the articular disturbances. In the 18 cases of the other group, the polyarthritis appeared after cessation of the malarial fever, and ran an afebrile course in cases, afebrile course in 12, with irregular remissions and exacerbations. In 11 cases, objective symptoms were present in addition to the pain, such as swelling and occasionally effusion. In one case, endocarditis occurred. The knee was most frequently affected, usually in conjunction with involvement of the shoulder. The fingers and toes were never affected. The blood findings were negative during the polyarthritic stage. Quinin and salicylates were employed in combination, and usually led to improvement but never striking recovery. The course was usually prolonged, with residual changes or slight pain which finally yielded to thermal therapy. In these cases, the polyarthritis was observed as late as the sixth week of convalescence.

The malarial origin of the articular disturbances is not definitely established, but is probable.

QUININE IN MALARIA: MODERN METHODS OF TREATMENT

In malaria it should be given in a perfectly definite way and according to a perfectly definite plan. It is given in general in too haphazard a manner, and disappointments from its use when they occur usually result from such haphazard methods.

The best plan, I believe, is that advocated by Bass. It is based upon well-determined facts with reference to the life history of the malarial plasmodium, and upon equally well-determined facts with reference to the strength of concentration of quinine necessary to affect the plasmodium in the human body.

These facts, as outlined by Bass, are as follows: (1) The adult plasmodium malariae is destroyed in the blood of a patient who has been saturated continuously for forty-eight hours with quinine. (2) The spores of malaria can live definitely in the blood of patients regardless of the amount of quinine taken. (3) Spores remain latent in the presence of quinine in the blood and begin to develop into plasmodia only after the drug has been entirely eliminated from the system. (4) It takes seven days for the spores to develop into adult spore-bearing plasmodia. (5) Quinine must be absorbed in order to do its work, hence the necessity for a preliminary cathartic, a soup diet, and hot water taken with the quinine. (6) The blood must remain continuously saturated with the quinine, hence the importance of administering the remedy regularly night and day. (7) The total amount of quinine necessary is very small.

The amount of quinine necessary to kill all the plasmodia in the circulating blood is 10 *grains* (.65 gram). 5 grains is not sufficient. More than 10 grains is unnecessary.

The preparation of quinine to use is the bisulphate. It should be given in compressed tablets, or in the aromatic syrup of yerba santa: This vehicle disguises the unpleasant taste of the quinine.

The time of administration of the drug is when the diagnosis is made. It is not necessary to consider the proximity of the next chill or to wait for a cathartic to act, or for the fever to fall. In certain cases (Class 2 and 3 below) the preparation of the patient is proper and advisable.

Three clinical conditions arise which call for a variation in the methods of dosage. The first of these is the pernicious form, in which the patient is either comatose or vomiting, or is so sick that death is imminent. In this case, quinine by mouth is too slow and too uncertain, and *intravenous administration* is necessary. The dihydrochloride of quinine is used: 10 grains in 20 c.c. of normal salt solution. It may be repeated once every 12 hours for two or three doses if necessary. Infiltration of the tissues with the solution during the administration will cause some inflammatory reaction.

The second condition is for an acute case with the patient not dangerously ill. Here it may be possible to give a preparation consisting of a cathartic, 2 ounces of castor oil, on the evening before beginning treatment. The patient's diet consists of hot soups only, for the first few days, and he should remain in bed for the same period. On the morning after the administration of the cathartic, the patient is given 2 *grains* (0.13 gm.) *of bisulphate, or hydrochloride of quinine, every 2 hours, day and night for two days and nights.* With each dose he takes a half pint of hot water. An alarm clock may be used in order to render the repetition of dosage exact.

After this the patient should take 30 grains of quinine every night for eight weeks. In a less severe case, the first period of rest in bed and two hours treatment may be omitted, and 10 grains may be given every six hours for four or five days, and then 30 grains taken every night for eight weeks. The eight week's period of treatment has been arrived at by Bass as the period of time which will disinfect 90 per cent of all cases. If a relapse occurs the course must be repeated exactly and nightly administration continued for three or four months.

The third condition comes up when the patient has been treated for an acute condition and is over it, but has a chill every seven days. This is the form of malaria we meet with most often in temperate climates, and I have used the Bass plan on these cases with marked success. The patient must be prepared with a cathartic and given a two-day rest in bed during which time he takes 2 grains of quinine every two hours with a half pint of hot water, and soup diet; this is repeated every six days on the day before the chill occurs and the day of the chill for ten weeks or more.

Some people believe that they cannot take quinine, but in most instances they can, and the use of other drugs for malaria is to be discouraged.

Dosage for children: Bass, after trying smaller doses, believes disinfection cannot be accomplished short of the following doses:

Under 1 year	—½ grains
1 year	— 1 grains
2 years	— 2 grains
3 and 4 years	— 3 grains
5, 6, 7 years	— 4 grains
8, 9, 10 years	— 6 grains
11, 12, 13, 14 years	— 8 grains
Over 15 years	—10 grains

DISCUSSION

Dr. H. A. Taylor, Raleigh:

In looking over the program for today and finding the subject "Malaria" listed for discussion, I wondered what phase of the subject could be discussed intelligently and effectively in the short time usually allotted to papers, and immediately thoughts of sympathy were extended to the writer.

Malaria a Rural Disease: Malaria is essentially a rural disease for the reason that the mosquitoes held responsible for the transmission of the disease are essentially a rural species, and any reduction in the incidence of the disease will benefit the rural more than the urban population. The serious loss from the disease is not due to the costs of treatment and deaths, but rather to the loss of efficiency of labor, loss in net crop productions and in the predisposition to other and more fatal diseases.

Certain biological facts concerning the malarial mosquitoes explains the rural nature of the disease. While the mosquitoes which

have been incriminated as the principal vectors of the disease are domestic in their adult habits, they may be considered only partially domestic in their breeding habits as natural and permanent collections of surface water are more often selected for breeding areas. The larvae of anopheles will thrive best in natural collections of water, such as, slowly running streams, edges of shallow ponds, barrow pits, and seepage areas. Permanent water collections of this nature are common to rural and not to urban districts. The density of anopheles may be said to be in direct proportion to the opportunities offered for propagation. That malaria is essentially a rural disease is demonstrated by its disappearance from areas where the land has been drained and brought under cultivation.

Since the reduction in the density of malarial mosquitoes is in direct ratio to the reduction in collections of surface water in which the mosquitoes may breed, the control of the disease through the application of anti-mosquito measures in the aquatic stage is biological in scope.

Plan for the Investigation and Control of Malaria: The prevention of malaria by measures directed against the insect host, and the treatment and cure of the disease, are entirely two different problems. The former is biological in nature while the latter is strictly a medical problem.

The County Health Officer, assuming responsibility for the investigation of malarial conditions in a given county is immediately confronted with three prime objectives:

1. He must determine the incidence of the disease and the extent to which it is a menace to the health and economic efficiency of the people.

2. The factors responsible for the transmission and spread of the disease.

3. The possibility of controlling the disease at a cost within the economic reach of the people.

The first and primary object of the County Health Department is to determine the incidence and distribution of the disease in the county. This can best be done by preparing for the purpose a survey map of the territory under investigation, locating each home thereon with special reference to the breeding of mosquitoes (see survey map), listing the population, taking a history index as to the prevalence of the disease during the two preceding years, examination of school children between the ages of 2 to 12 for enlarged spleens, taking blood smears for a parasitic index, and the securing of morbidity and mortality statistics from the State Health Department. Each case of malaria should be indicated on the "Survey" or "Spot Map" prepared, denoting at the same time on the family record or index card, the name, age, sex, color, duration of the disease, history of previous malaria, and probable source of infection.

The preliminary survey conducted in conjunction with, and as a distinct part of, routine duties of the Health Department to determine the extent and geographic distribution and areas of con-

centration of the disease should be continued throughout an entire malaria season (May 1 to November 1).

In determining the incidence of the disease and the extent to which it is a menace to the health and economic efficiency of the people, the health officer must follow certain well-known lines of procedure, such as:

1. *History Index as to Positive or Negative Malaria*: House to house visits should be made for the purpose of recording the presence or absence of malaria for each individual during the two preceding years. Case histories should be recorded as positive only in case of individuals giving a history of repeated periodicity. Care must be used in determining the extent and distribution of the disease. The average layman has a tendency to make such answers as he thinks the field observer may desire, or, on the other hand, may deny symptoms of clinical malaria.

Periodicity may be considered a trustworthy indication of malaria in the case of tertian or quartan infections, but quotidian periodicity is found associated in a more or less degree with all cases of fever. For practical purposes the tertian and quartan periodicity may be accepted as conclusive proof of malaria infection, while quotidian periodicity must be differentiated from periodicity associated with septic conditions.

2. *Spleen Index as a Measure of Malaria*: The use of enlarged spleens as a means of measuring the extent of malaria, is especially useful in children. It requires much less time than the taking of clinical histories and the examinations of blood smears to determine the presence or absence of malaria.

Relationship Between Degree of Splenic Enlargement and Malaria Infection: On a study to determine the reliability of the spleens as a measure of malaria, Dr. Darling found that a definite correlation existed between the size of the spleen and positive bloods based upon a series of 338 cases. Of 51 persons in whom the spleen was palpable on inspiration, 35.3 per cent revealed plasmodia in the peripheral blood; of 126 with palpable spleen, 34.1 per cent were positive for plasmodia; of 29 with spleen enlarged to one finger-breadth below the costal margin, 60.0 per cent were positive to plasmodia; and of 23 with spleen enlarged to three finger-breadths below the costal margin, 69.5 per cent were positive for plasmodia.

A comparison of the spleen rates, plasmodium rates, and malaria history index of 571 persons examined on thirty plantations in the county showed that the spleen index furnished a more sensitive measure of malaria than the blood index. These persons, whose malaria history index was 37.4 have a spleen index of 40.8 as compared with a plasmodium index of only 25.2.

Blood Indices: It is well to consider the microscope as an additional means of determining the presence or absence of malaria. All known means of diagnosis must be brought into play. A febrile attack should be at once a signal for a blood examination. Typical Rigors, definite course of attack, and periodicity may not be present.

Especially is this true in mild infections and in those individuals who have developed a degree of acquired immunity.

A Study of the Factors Responsible for Transmission: The preliminary epidemiological work to determine the incidence, seasonal distribution and concentration of the disease will show clearly that certain localities in the county are malaria centers. The next step is an intensive mosquito survey of the areas showing relatively, high rate of infection as indicated on the spot or survey map.

Method of Biological Study in Relation to Endemic Foci of Infection: A general division of the breeding areas found in a territory should be made into first, natural or breeding places of choice, which include such collections of water as shallow margins of swamps, slow moving streams, permanent ponds, seepage areas, ditches, rice fields, etc., and second, artificial or breeding places of necessity or accident, such as water barrels, street gutters, horse troughs, stump holes, etc., and indicated on the survey map within a half a mile of every house containing a patient with malaria, and their character indicated as to whether controllable or uncontrollable.

Formulating a Program of Control: From the data elicited during the preliminary survey to determine the incidence and geographic distribution of the disease and biological factors responsible for transmission, one can determine what plan of procedure to pursue in formulating his control program and will be in a position to suggest the mosts promising, practical and inexpensive method of control.

As malaria is now a disease recognized to be on the decline, due largely to the advance in civilization, and its distribution as a serious public health problem is confined, comparatively speaking, to a small area of the State, and to but a small number of states, its control becomes largely a local and not a state responsibility.

Dr. Charles L. Minor, Asheville: I am one of those unfortunate creatures called specialists. It is a good many years since I had any contact with malaria, therefore I can not discuss the paper. Nor do I believe in simply making compliments, but I believe, with a State Board of Health such as ours, with Dr. Rankin at the head, we may well praise our health officers for the work they have done.

There is one question I want to ask Dr. Taylor. Is the elimination of malaria within the possibilities of preventive medicine? I know that hookworm disease can be eliminated, and among tuberculosis specialists it is conceded that tuberculosis may be eliminated. But with the geographical situation of the South it strikes me that the elimination of malaria may be very difficult.

No one can estimate what malaria has cost the South. Think what those splendid English immigrants in Virginia could have done had they not spent so much of their time suffering with chills and fever. Had it not been for malaria and hookworm disease, we should not have had to see Northern men, who have to hustle on account of their cold climate, getting ahead of us. But, thank God, Southern men are now rebuilding the South, and it is Southern men

who are leading in the fight on these diseases. I thank God that we are not so badly infected with hookworm and malaria that we are neglecting research and study in these diseases.

Dr. Taylor: I am one of those individuals, perhaps unfortunately, who do not believe anything is impossible. There is more research work being done today on malaria than on any other subject. Had the same amount of research work been done a few years ago we should not have spent quite so much money on the control of malaria. The problem in this state is a difficult one. Malaria *per se,* in my opinion, can not be entirely eliminated. I am not one of those individuals who believe that you can treat successfully or prevent successfully one disease alone, but you must improve the general condition of your people, including the housing conditions or living conditions, and in doing this you not only reduce the malarial infection, but reduce all other more serious and fatal diseases. Malaria is something we must continue to fight, but it is gradually disappearing, and as soon as we can improve conditions in the rural districts we can get a hand on malaria. Every man that builds a house should be instructed as to the proper location of that house, and it should be so constructed as to lend itself to screening. Unfortunately, surveys in some of the rural districts of North Carolina reveal the fact that only about five per cent of the homes will lend themselves to screening, because they are so poorly constructed. Unfortunately, the majority of these houses are located in close proximity to breeding places for mosquitoes. In the eastern part of our state, with a five to ten per cent infection in the sand hill region, and a fifty to sixty per cent infection in the lower regions, we can not completely prevent transmission, but can, by improving living conditions reduce the disease.

Dr. Minor: Then fundamentally you believe that malaria is, as I say of tuberculosis, a sociological rather than a strictly medical problem?

Dr. Taylor: Yes.

Dr. W. S. Rankin, Raleigh: One of the interesting things to me about this subject is what Dr. Taylor brought out—just how much doctors and health officers have to do with the decrease, and how much is sociological—due to better living conditions. When Dr. Minor raised that question my mind went back to my own boyhood home in the Piedmont section—Cabarrus County. The malarial conditions that existed there once do not now exist. During the Civil War, and after the war, they bought quinine there and sold it by the pound. Everybody used quinine. It was as much a household necessity as Arm & Hammer brand soda or Gail and Ax snuff. When one of the family had chills and fever my father never sent for a doctor; he did not need to. I could treat malaria before I ever studied medicine. The fact that I allowed myself to have only one chill a season proved that I could treat malaria before I studied

medicine—or that my father could, and he was a farmer, not a doctor. That county was heavily infected with malaria. It has had a full-time county health officer since 1921, I believe, but malaria had disappeared long before that. Malaria had left No. 3 Township and it was a non-malarious district as far back as 1900. Now, doctors and health officers had nothing to do with its disappearance, unless you trace the decrease back to the teaching of the medical profession. Very little drainage was done until about 1915, but malaria had gone long before that. I do not know why it disappeared.

Dr. Minor: Didn't the improved financial conditions have something to do with it?

Dr. Rankin: Well, I don't know about the financial conditions. It is not due to screening. I do not believe Dr. Taylor would know why it has disappeared. Now, there is a similar section in Rowan County where there are a number of small streams. They have an endemic infection of malaria there at this time. Why it has disappeared in the one place and come out in the other I do not know. Perhaps there is such a condition as a community immunity to it. The more we study malaria, its treatment, etc., the more we run into these unexplained occurrences.

Getting back to my childhood, before we did any drainage, screening, etc., there was a malaria problem which was solved by some means which we do not understand.

Dr. Minor: Sociologically?

Dr. Rankin: Yes, sociologically, if you want to use a big, broad term.

DIPHTHERIA, ITS CONTROL AND PREVENTION

A. C. Bulla, M. D., City and County Health Officer, Raleigh

I have not written this paper for the purpose of multiplying words and pages, to consume a certain amount of allotted time in this program, and to force you, with your permission, to listen to it. Time is too important, particularly since you are away from your daily labors and monotonous routine and in a mood to enjoy yourselves for a few days. It would not be fair and just and I shall not burden you with it.

I have nothing new of my own to impart to you. I have my ideas about diphtheria, its control and prevention. An opportunity has been given to me to express them—I have done my best.

My ideas and my opinions may run counter to yours. If they do not this meeting cannot be justified and should not have any place in history. Therefore, you and I expect to go away from it richer in knowledge, up-lifted in spirit, with a renewed vigor and vim and with a determination to strengthen the battle front.

Diphtheria has come down to us from antiquity under many names, such as "Egyptian Sore Throat," "Putrid Sore Throat," "Gangrenous Ulcer," and the like, until about the first part of the nineteenth century when it was given its present name, Diphtheria. It is frequently called membranous croup by physicians and laity alike. There is proof which justifies the belief that this diseasse existed in Greece long before the time of Hippocrates. It was recognized during the dark ages and no doubt contributed to the high death rate of that period. It probably found its way into this country through the American Colonists in the early part of the seventeenth century.

Its specific cause is well known to all of us and was discovered by Klebs in 1883, and one year later Loeffler worked out its cultural characteristics and carried on the work of Klebs, therefore, it is known as the Klebs-Loeffler Bacillus.

It is more or less prevalent throughout the whole civilized world. With the rapid development of modern transportation facilities, which make it possible to travel around the whole world and back again in the course of a few hours, we would not expect anything else among susceptible people. However, it seems to be more prevalent in the temperate climates.

It has a wide margin of racial preferences, but this does not concern us here in North Carolina, where our native born, the white and the black, constitute about 99.5 per cent of its population, the white being more susceptible than the black.

When we begin to trace this disease from its antiquity down to the present time we find that the morning star rose with the fruitful discoveries of Klebs and Loeffler, who found and worked out the life history of the bacillus, snuffed out the flickering candle of mystery which caused the disease to be shrouded in darkness for past centuries and illuminated the world with hope and cheer by announcing the specific cause of the disease. The light of this candle, which illuminated the world, has never been dimmed, but has grown brighter and brighter from year to year, until today it is one of the brightest lights of modern medicine and its discoverers take their places along with no lesser lights in the medical world than those of Jenner, Lister, Pasteur, Koch and Gorgas.

No more diphtheria is a goal yet to be achieved, notwithstanding the fact that we know, and have known, its specific cause for forty years and more. Certain control measures have been in use since this time, but the last decade has given to us many additional measures, which today, in the light of our present-day knowledge, make it possible in counties with well organized health departments to apply these measures to the extent that diphtheria will not only be controlled but prevented. It can be done.

One of the fundamental principles of public health work today is to teach the greater mass of our citizenship the practical application of sanitation and hygiene—of vaccines and sera—the application of measures, tried and proved, to cure, control and prevent diseases. We know it is better to guard well the precipice at the top

than to wait at the bottom with an ambulance. We are rapidly passing from an era of curing diseases to an era of preventing them.

Probably no other disease known to us today presents greater opportunities and possibilities to demonstrate what can be done to control and prevent than the one under discussion. The death rate in 1890 was 97.8 per 100,000 population in the registration area of the United States. This probably represents the normal rate before the day of antitoxin, which was placed in the hands of the medical profession in 1895. Five years later, with only a few laboratories manufacturing and distributing high priced antitoxin, the death rate had been reduced one-half. Since then the reduction has been slow but gradual, until today the rate in North Carolina is 12 per 100,000 population. This great reduction has been brought about largely by the use of antitoxin as a cure and as a prophylactic.

Since 1913 the Schick test and toxin-antitoxin mixture have been in use. But not until 1918 have they been widely and successfully used. They are the most valuable methods we have today and they offer the greatest possibilities of control and prevention that we have at our commond.

Methods now in use to control and prevent diphtheria are:

1. Early diagnosis.
2. Quarantine and isolation.
3. Swabbing and culturing contacts and convalescent cases.
4. Antitoxin.
5. Toxin-antitoxin mixture or diphtheria vaccine.
6. The Schick test.

I shall discuss these methods briefly. To start with, we must first keep ever before us the known fact that all diphtheria comes from a previous clinical case recognized or unrecognized, or from a carrier.

An early diagnosis and the opportunity of barring the patient from other members of the family until it is determined what the sickness is, are wonderfully effective means in the control of the disease. This fact should be emphasized again and again because it will not only reduce the morbidity rate but materially reduce the mortality rate.

Quarantine and isolation of diphtheria cases and contacts have wide variations of usefulness in controlling and preventing this disease. We must admit its effectiveness depends, to a large extent, upon the degree to which it is backed up by public opinion and the public's conscience, rather than by statute. Back of public opinion and the public's conscience lie the basic principles of these methods of control and prevention. We know that a small percentage of convalescent cases and contacts remain virulent carriers of this disease. Therefore, to release contacts at the expiration of the incubation period, seven days, and the convalescent cases at the expiration of the quarantine period, twenty-one days, among susceptible people without knowing whether they are carriers or virulent diphtheria germs, are ineffective means of controlling this disease. Swabbing

and culturing of concalescent cases to be released should be encouraged and is an effective means of control. Two negative cultures taken from nose and throat at two to three days intervals should be required of all convalescent cases before being released. If two or more cases occur among contacts, within one week, all contacts should be swabbed and cultured.

The giving of the prophylactic dose of antitoxin to all contacts, young and old alike, as a routine, should be discouraged. Children in homes, under six years of age, who have been in close contact with a dangerous case, provided, they have not had three to five injections of toxin-antitoxin mixture or a negative Schick, should have the prophylactic immunizing dose of 500 to 1,000 units of antitoxin. There should be a clear indication for it before it is administered. I think in children over six years of age and in grown people we should withhold the prophylactic dose and apply other measures, which include close observation of contacts, culturing, history of toxin-antitoxin mixture, and the Schick test, all of which are important in the control and prevention of diphtheria.

Three to five doses of toxin-antitoxin mixtures should be given to all children from six months to six years of age without applying the Schick test. As the majority of this age group are susceptible it is waste of time to give it. Children over six years of age and grown people should be Schicked to determine their immunity or susceptibility before the administration of the toxin-antitoxin mixture.

Dr. Park, of the New York City Health Department, says: "The Schick reaction is a convenient and reliable clinical test, by which the antitoxic immunity of an individual to diphtheria can be determined."

To give the Schick test is a simple procedure and can be done very rapidly. The test is made by injecting 0.2 c.c. of diphtheria toxin intracutaneously on the flexor surface of the right forearm. The control is made at the same time by injecting 0.2 c.c. of heated toxin on the left forearm. The results of the test should be read on the fourth to eighth day inclusive. The reactions which may follow this injection are: positive, negative, pseudo-negative and positive-combined. The positive and positive-combined represent lack of antitoxin in an individual, while the negative and pseudo-negative represent antitoxins in the individual. The local reactions vary in intensity from a faint plus minus to a very deep two plus. The application of the Schick test to children over six years of age and in grown people is justifiable before giving the toxin-antitoxin mixture. Of 3,000 school children Schicked in Wake county, including the city of Raleigh, I find only 20 per cent who give a positive reaction; 700 of the 3,000 were colored children with only 13 percent positive.

The health authorities in the town of Auburn, New York, of 36,000 population, in the last two years, have Schicked about 85 per cent of the school population and immunized those found to be susceptible. They have also immunized 700 pre-school age children. During the last school year there were no cases of diphtheria among

the school children who had been immunized, and seven cases and no deaths among children not immunized. If we can control and prevent the cases among school children and thereby reduce the numbers of convalescent carriers and contact carriers, we will have reduced to a minimum, in my estimation, the source of most of our diphtheria among pre-school age children.

TO SUMMARIZE.

1. Early diagnosis will reduce the morbidity and mortality rate.
2. Quarantine and isolation unaided by public opinion are ineffective means of control and prevention.
3. Two negative cultures taken from nose and throat of all convalescent cases from two to three days interval should be required of all cases before released.
4. The prophylactic dose of antitoxin should be given only when there is a clear indication for so doing, and not as a routine to all contacts.
5. Children from six months to six years of age should be given three to five doses of toxin-antitoxin mixture without being Schicked.
6. Children over six years of age and grown people should be Schicked before taking the toxin-antitoxin mixture. Our compartively low percentage of positives justifies this.
7. By immuizing the school population, and thereby eliminating cases, convalescent carriers and contact carriers, greater protection will be given pre-school age children, who, because of no fault of their own, become the victims of this disease.

DISCUSSION

Dr. C. W. Armstrong, Salisbury: Dr. Bulla, in a very clear and concise manner, has given you an outline of the modern methods of preventing diphtheria. There is certainly not much I can add, except in the way of repetition, stressing some of the facts he has brought out. It is a very important subject, and the case rate in diphtheria shows a very decided contrast to the case rate in other contagious diseases in North Carolina during the last several years. Unlike the other contagious diseases, there has been an increase instead of a decline. The whole country was shocked by the outbreak of a great epidemic in Alaska. I have heard of no toxin-antitoxin being shipped in. Unless they do administer toxin-antitoxin in Alaska they may expect another epidemic similar to this one. The way to control it is by the Schick test and toxin-antitoxin. In my county about seventy-five per cent of the cases of diphheria come not from an actual case but from a carrier. In fact, it has been estimated that one per cent of the entire population of the United States druing the winter months are carriers. Now, it is impossible to culture all those people or to isolate them if found, so the remedy lies in giving the Schick test and toxin-antitoxin. Even if there are carriers present you do not have to worry, because the susceptible group is immunized.

I had a case of diphtheria recently in a Schick-negative child. I have been doing Schick tests for some time in my county and was prepared for it. It will happen to you sooner or later, especially if you look upon the Schick test as a simple matter and one which may be done rapidly and carelessly. For instance, if the mixture is not used soon after it is made up it will deteriorate, and you may get a negative in a positive child. Or it may be given too deep under the skin, or may be given too soon after antitoxin has been administered. Don't tell the parents positively, for a fact, that the child will never have diphtheria, but that probably it will not. About ninety per cent will not have it.

As to giving antitoxin in exposed cases of diphtheria, I think it is absolutely criminal to give every child in a home exposed to diphtheria a shot of antitoxin. There are certain children who should have antitoxin, and it is easy to determine which children, if you have time. If it comes in the susceptible age group, before six years of age, that child should have antitoxin, I think. It has been said by some that you get into trouble by giving a thousand units of antitoxin if that child has diphtheria later. However, I think very few of you will ever see a case of diphtheria in a child given one thousand units, and very few of us will see a case of anaphylaxis. It is talked about a good deal, but rarely happens.

Now, you can not always save a child with antitoxin. It does not always work. Then many of the children who apparently get well of diphtheria do not really get well, for there are complications that come on—paralysis of the heart muscle, etc.

You should be very careful, I think, in advising a parent that toxin-antitoxin will prevent diphtheria. It will, no doubt of that; and then it will not. We had a case the other day in Salisbury in a child who took three doses of toxin-antitoxin about three years ago. It was tested about a year ago and was still positive, so took three more doses. It is sick with diphtheria now. There are some cases that, in spite of all the toxin-antitoxin you can give them, will come down with diphtheria. It is not one hundred per cent perfect.

The reaction from toxin-antitoxin can be avoided to a large extent if you give it deep intramuscularly instead of subcutaneously. The objection that some people have, that the children have very sore arms and are rather sick, can be overcome by giving it deep into the muscles.

If you go into this thing thoroughly you can control diphtheria to a large extent. I do not believe you can ever control it completely, as Dr. Taylor or Dr. Rankin said of malaria, but you can reduce it to a minimum. You can reduce exposures in the home by immunizing the school children, but you want to remember that most of the deaths come in children under six years of age and not in the school children. So you have to work with the children from six months to six years of age.

Dr. F. R. Harris, Henderson: I just want to say that I thought this was one hundred per cent thorough. I pronounced one case

immune of those I had Schicked, but a doctor came back a few months later and told me the child had diphtheria. The laboratory pronounced it negative, but the doctor said it was diphtheria, although the case had been pronounced by me immune.

Dr. R. S. McGeachy, Kinston: I firmly believe that diphtheria can be prevented. In the fall of 1923, I gave toxin-antitoxin to over three thousand people in my county, and last fall we had just about half the number of cases we had the year before, and just about one-third the number that occurred three or four years before. I believe if we could break mothers of the diabolical habit of taking Tom and Susie to see little Mary Jones, who is sick, we should get rid of lots of it.

Dr. Charles L. Minor, Asheville: In a practical way Dr. Armstrong's excellent talk had a fault. He speaks as a scientist. Knowing, as every student does, that there is nothing absolutely perfect, he has made the imperfections so plain that the general man, the man from the back counties, is discouraged. I am sure a layman, hearing Dr. Armstrong, would say, "Well, I am not going to use antitoxin in my child." Yet he is wise to warn us that it is only so far useful. But you can carry that too far; you can discourage the use of the thing. This truth that you are studying has to go out and be used and be applied at the bedside by lots of men who have not the training you have, and if you fill their minds with fear they will not use it. We know that antitoxin will not always save a child, and that the other tests are not absolute, but if you bring forth doubts and fears you are doing harm. Men must believe that they can do something. Have you ever seen the very ultra-scientific man at the bedside—how he works, how very carefully he makes his diagnosis? Then ask him what to do, and he says: "Well, you might do this or you might do that." Now, that is not the practice of medicine; that is scientific study. Scientific study must not paralyze our ability to act, and if you bring forward all these difficulties men will not act.

Dr. R. L. Carlton, Winston-Salem: We have just finished a little Shick-testing campaign among the school children in Winston-Salem in which we tested six thousand. The percentage so closely followed Dr. Bulla's that I wanted to mention it. The percentage of all positives was 20; among the whites 25 and among the colored 15.

What do you do for those children who get a reaction which persists for several months—intense itching in the arm? I have two patients now, two young women, who are about to drive me to drink. I have tried everything from the violet ray to applications of alcohol, and they are in misery.

Dr. James A. Doull, Johns Hopkins University, Baltimore, Maryland: There is no subject in which I am more interested than diphtheria. The interesting question, it seems to me, is why the present measures have not succeeded, and what is the difficulty. There is

no more interesting period in the history of diphtheria than between 1820 and 1860. During those days there is no question that diphtheria was much less prevalent than after that date. Then between 1860 and 1885 it was at its highest mark. Why did that happen? Was it because human intercourse had increased throughout the world? No one knows. Then diphtheria began to decline from the nineties on to the present day. Then about 1895 antitoxin was introduced. Try to prove statistically the value of antitoxin and you are in great difficulties, yet no clinician denies its value. Now scarlet fever, in which we had no specific remedy until recently, has declined even more than has diphtheria. Whether it is in the same category as the malaria problem I do not know; whether the virulence of the organism has decreased I do not know, but it seems probable.

Concerning the reliability of the Schick test I may say that in Baltimore, in a group of 3,500 negative reactors to the Schick test, four cases of diphtheria were reported over a period of about two years and each of these cases has been investigated very carefully. In two we were unable to get a positive culture, and I think they were tonsillitis due to some other organism. In the other two we secured positive and virulent cultures. The technic of the Schick test was average technic; the toxin was of known potency. In the city at large among 3,500 children of the same ages we should have expected thirty cases in the time under observation. Two occurred. Therefore, the chance of diphtheria among Schick-negatives is one fifteenth of that for other children of the same age according to our experience. In biology there is nothing absolute. In the case of toxin-antitoxin we are in the same predicament; it is about three-fourths efficient.

Dr. Minor: That is the point you must stress. Dr. Armstrong stressed the twenty-five per cent of failures; he stressed the weakness instead of the strength of this measure.

Dr. Doull: It is the one-fourth who do not respond in which I am especially interested, as it may be among these children that most of the deaths occur.

Dr. Armstrong: I want to say to Dr. Minor that I talk quite differently to my people in Rowan County when I am out on a campaign than when I am here talking to health officers. I tell my people I would not ask them to do anything I would not do myself. I tell them it is not absolutely perfect, but if they use it in all probability they will not have diphtheria.

METHODS USED BY THE EXTENSION DEPARTMENT OF THE NORTH CAROLINA SANATORIUM IN FINDING INCIPIENT TUBERCULOSIS, AND WHY.

D. R. Perry, M. D., Sanatorium

Tuberculosis is like a house afire, and can only be put out when it is discovered early. This statement is not difficult to prove when

we call to mind the recent survey of the after-results of the treatment of three thousand patients discharged from the North Carolina Sanatorium during the last ten years, as recently reported by Dr. McCain. The facts are, that, of the incipient cases 89% are living and 80% are working; of the far advanced 27% are living and 13% are working. No doubt from the careful study of the results obtained in the treatment of incipient tuberculosis, all of us who are interested in the prevention of disease can see the great advantage in working to the one great end of discovering every case of active tuberculosis as early as possible. The organization of this campaign depends as largely upon prevention as upon early diagnosis, and the early diagnosis depends largely upon the general practitioner or family doctor, who is the one first consulted and whose opinion is usually final.

It is the desire of the Extension Department to coöperate with the physicians in every way possible by furnishing free consultation service for their doubtful cases. This is accomplished by the traveling clinicians or traveling clinics, which are provided for by the North Carolina Sanatorium for the Treatment of Tuberculosis because this institution recognizes the above mentioned importance of getting the cases early. When clinics are arranged in the counties, notices are sent to every doctor in those counties, asking his coöperation and assuring him of the coöperation of the physician who is conducting the clinic. It is very important that these clinics be under the immediate supervision of the Health Department, where there is such organization in the county. If there is no Health Officer, or County Physician, the County Nurse is next in line. If there is no nurse—some of our clinics have been conducted under the auspices of the Welfare Department. Where there is a nurse accessible we ask her to assist in the actual conducting of the clinic. Where the Welfare Officer takes the place on the outside, as you might say, visiting the doctors in the county, and looking up the cases that do not show up, for whom appointments have been made, we find that the fact that he is a Welfare Officer has a great deal to do with bringing the indifferent cases to the clinic. This can be illustrated by a clinic held in Caldwell county, where I am sure the Welfare Officer was the only person in the county, other than the sheriff, who could have brought out some of the cases in the county. She, by the way, was a nurse and knew what cases should be examined.

This brings me to the point as to who should be examined in these clinics, and I will enumerate the most important of the symptoms which should be always considered by every physician, nurse, and health officers in reporting cases to the clinic. These symptoms are side pleurisy, wet or dry, loss of weight, a cough which lasts longer than three weeks, a definite hemorrhage from the lungs, a temperature that is normal or subnormal in the morning and above ninety-nine in the afternoon, weakness and loss of strength, a run down and easily tiring condition, and chronic hoarseness. The most important of which are hemorrhages from the lungs and definite pleurisy. Close associates of patients and those exposed to open cases should be ex-

amined, especially if they are young adults—not the curious, who take the time of people who really need the examination.

Now this information must be carried to the people in the counties before the clinic begins, and by all means dates must be made for every patient who desires an examination. In this way the clinic can run systematically from beginning to end. Dates are made for from twelve to fifteen patients each day, beginning in the morning at eight-thirty and continuing until four o'clock. The dates being timed so that a history can be taken and an examination made every thirty minutes.

It is very necessary that every person in the State know the symptoms of tuberculosis, and the nature of the disease in its incipiency, in order to make the clinics in the different counties as successful as they should be. The individual who knows about these symptoms, unless he is feeble-minded, has no objection whatever to being examined and told that he has tuberculosis. Most people recognize the fact that tuberculosis is curable, because we see cases in every county in the State who are well and working—many of them ex-patients from well regulated sanatoria.

The way to get this information to the people is through the county newspapers, through suitable posters announcing the date, hour, and place of the clinic, by the County Nurse visiting known and suspected cases; looking up the death certificates of the past few years and visiting these homes; looking up the contacts of the patients who have died in the last few years; through talks on tuberculosis in the schools, which are very helpful in locating cases having the symptoms just mentioned. Sometimes children will tell you that "mother, father, uncle, or aunt have these very symptoms," or the teacher will tell you that she is visiting in certain homes where these symptoms exist. Civic organizations are very helpful in outlining the symptoms through talks on tuberculosis, for these organizations are community builders and are interested in whatever is presented to them that is for the good of their immediate community.

In conducting clinics we at times run across cases that it is impossible for anyone to tell definitely by one physical examination whether or not they have tuberculosis. Under these conditions the patients are advised to keep an every 3-hour record of their temperature and are referrred to the State Sanatorium to a clinic that is held every morning to decide definitely whether the patient has tuberculosis in its early stage or not. All persons in the State are welcome to be examined there if they have the symptoms of tuberculosis. This clinic is free, but dates must be made, else there is a charge. At the Sanatorium clinic the physicians naturally have the advantage of the x-ray and the laboratory, but in many cases this is not necessary to make a diagnosis. When the symptoms and physical examination are both doubtful then it is well enough to refer the cases to the State Sanatorium clinic for further study and x-ray examination if necessary. To all cases reported to the State Sanatorium from outside clinics or from the Sanatorium, clinic literature is sent, telling them

of their disease, its prevention, its cure, and the importance of Sanatorium treatment.

Now, as to the treatment of these cases, all who are familiar with the treatment of tuberculosis will agree that a well-run sanatorium is the place to get the best treatment possible. Therefore all cases should be sent to a well regulated sanatorium for a period of months, if necessary, to obtain the proper treatment, the proper advice and education. The Clinic Physician will assist positive cases in making application to the State Sanatorium, or to any of the private institutions. Often cases that are doubtful in the outside clinics and in the Sanatorium clinic are asked to go to the State Sanatorium as patients in order that their case may be studied and observed until their condition can be determined.

You will notice I have not gone minutely into the symptoms of tuberculosis, its different phases and different onsets; neither have I mentioned minutely the routine of the physical examination, because each of these would consume a paper itself.

DISCUSSION

Dr. Charles L. Minor, Asheville: The doctor is too prone to think that the great thing in finding incipient tuberculosis is a physical examination. The great thing in finding incipient tuberculosis is careful and proper study of the symptoms of the patient. If the doctors throughout the state who are not skilled in making a diagnosis in incipient tuberculosis would only take pains to study the symptomatology carefully they would very soon find that at least one-third of the diagnosis, and even more, rests on the history. If you get a definite and clear history, even if the physical examination is negative, which may very well occur unless you are an expert, then you may send the patient to the Sanatorium, you may get a well taken x-ray, you may take the proper and necessary steps.

The only fault I have to find with the paper is that Dr. Perry did not mention extreme and unexplainable tiredness. That is an exceptionally valuable early symptom, if you can exclude hookworm. You should suspect and study any case with a definite and persistent tiredness. When the patient comes in and says, "I am so tired I don't know what to do," let the doctor keep before him the possibility of tuberculosis. We are so prone, when a patient comes in with a symptom, to think of only one thing that symptom may denote; if in a malaria region we think only of malaria, etc. But we must think of all these things—even a poor, God-forsaken specialist like myself. We must consider *everything*. It is in careful history taking that the diagnosis lies. I must say that there is an unfortunate tendency to rely wholly upon the x-ray, a feeling that you can not make a diagnosis without it. I would not like to have to get along without it—but we must not consider the dictum of the x-ray man as final. Before we had the x-ray we were making diagnoses on careful physical examination, and we can do so still. It need not be so time-consuming. Being a specialist, I like to make a very careful ex-

amination. I take two hours in history and examination, but you need not. We stand between our patients and possible death, and if because of any carelessness on our part we are not willing to take pains to study the conditions under which that sickness may have arisen, are not willing to make the careful examination which our training make us capable of, then we are neglecting our business, whether because we want to get to a baseball game or get to some other patient. It is not likely that the general practitioner will ever make the careful examination that Dr. McCain makes, or Dr. Perry, but every man has the ability to do ordinary general work and give his patients an honest deal. If he has not, at least let him be honest enough to send his patients to the Sanatorium, where he knows they will get it.

Dr. P. P. McCain, Sanatorium: There are two or three things about the clinics which I should like to mention. I am very glad indeed that Dr. Minor dwelt on the importance of symptoms, especially to the general practitioner. We feel in a well run sanatorium, where we have all the advantages of the methods of precision, that symptoms should count for at least 33 1-3 per cent, possibly x-ray for 33 1-3 per cent, and physical examination for possibly 33 1-3 per cent, if you can put it on a percentage basis. Nothing is absolute. A general practitioner, even an expert, if you might call him such, who is out on his own, should not count symptoms for only 33 1-3 per cent. We state that the average general practitioner should count symptoms for at least from 75 to 90 per cent, and the physical examination and other information he can get for from 25 to 10 per cent, according to his ability to make the examination.

We want the health officers in the state and the physicians of the state to feel that we are very anxious to make the clinics of as much advantage to them as possible. We are not in competition with the doctors of the state. These clinics are run primarily for those who are not able to go to the private specialist. We have some of the finest private specialists in the state of North Carolina that there are in the world, and we urge the doctors and we urge the patients that we see who think they have tuberculosis to go to these private specialists. We urge the patients who have tuberculosis and who are able to do so to go to the private institutions, to put themselves under the care of the private men. We have at the Sanatorium now about two hundred patients, most of whom are not able to go to private institutions. I should be glad to see a law passed prohibiting those who are able to go to private institutions from coming to the State Sanatorium. The law passed this year is a step in the right direction. We advise our patients to go to the clinician for advice. I want to say in behalf of the clinician that it is impossible frequently from the most careful physical examination and from the best history he can get to tell certainly whether or not a patient has tuberculosis, and the clinician is put to a disadvantage at times because he is expected to be one hundred per cent absolute. It is not fair to expect that of him. All of us make mistakes, even when we have the most elaborate apparatus, and under the most

favorable circumstances, so don't expect the clinician to be absolute. He will be honest with you, we will promise that, and he will advise the doctor and his patient as to what he thinks is best.

Dr. Minor: Another thing I should like to mention is that diagnosis sometimes demands what the public does not always realize—from a week to six months of study. It is very hard for a young man just located in a town, fresh from his study under the best teachers, to say that he can not tell, that he needs time to study the case. Many cases do not need it, those fairly advanced do not, but the really incipient case, in justice to himself and to the doctor, should have long and careful study.

Dr. J. H. Woodcock, Hendersonville: Dr. Minor said that very much depends on the history. I think probably thirty-five per cent, at least, depends upon that. Very often diagnosis is made by the x-ray before it is made by the stethoscope. As a general proposition, however, you get it right away with the stethoscope. In five per cent of the cases it is very hard to make a diagnosis, because you do not have rales at all. If it is deep tuberculosis, the x-ray will tell more than the stethoscope; if near the surface the stethoscope will tell more.

As to the symptoms, sometimes there is pain on pressure under the clavicle. The patient may have subnormal temperature; the temperature may be erratic, it may not be high in the afternoon. Frequently there is a difference in the pupils. The patient gets tired easily, loses his temper, gets angry very easily. I think those are two of the prominent symptoms we have in early tuberculosis. Sometimes there is an increase in weight; they do not always lose weight. I think that irascibility of disposition is one of the most frequent things we encounter.

CO-OPERATIVE NURSING AND THE HEALTH DEPARTMENT

Miss Clara Ross, R. N., Charlotte

Visiting nursing in the United States, though founded on the English tradition with its brilliant record of service through religious orders, was not organized until some time after the war between the States after schools of nurses had been established. Its first purpose was to give skilled nursing care to the sick poor in their homes and to teach sanitation. This service was later extended to people of moderate means, to insurance policy holders, and industrial groups at cost. In 1901, fifty-eight associations were employing 130 nurses. Compulsory education, about this time, forced large groups of neglected children into schools and in New York City, where this situation was already acute, a visiting nurse was loaned from Henry Street to do home-follow-up work with excluded children. In a short time she, with several others, were added to the school staff by the Board of Health. School nursing broadened and spread under the auspices of Board of Education and Health Department very rapidly. Various

public health movements swept the country, beginning with the tuberculosis campaign, and various groups of nurses were put in the field for instructive nursing. Many of these specialized services were taken over by Public Health agencies and some remained under semi-public organizations.

The Red Cross made an extensive demonstration of rural public health nursing during and following the World's War.

Nurses were added to municipal health departments and county health units. In many cities for a time there was overlapping, and it was possible for a mother to be bewildered by a visit from a tuberculosis nurse, an infant welfare nurse, and a school nurse while she was ill enough to require the services of a district nurse all in the same day.

Although all this development has been crowded into a space of 50 years, readjustments have been made, better plans of coördination services have been worked out through central councils and in some places all public health nursing activities are being carried on under a single Coöperative Nursing Association, with mutual benefit to itself, and to the health department that is directing its activities.

The administrative difficulties of private sick nursing through official health agencies have been solved through a Public Health Nursing Association with representation on its board of directors from the Medical Society, interested civic organizations, those contributing to its financial support, members at large, and city officials, members *ex officio*. The general policy of the activities of the nursing service are decided by this board, but the direction of the work is delegated to the Health Officer, the actual supervision of the nursing work to the nurse supervisor. Much of the success of these plans depends on the ability of different groups to submerge themselves into a larger association and the building of interest in not only the nursing work but in a general health program of which it is a part. Regular meetings and active participation by the board of directors is very important.

The question as to whether bedside nursing belongs in health department practice may be brought up. It cannot be settled by argument any more easily than the question of dental clinics in public schools. Health education is a legitimate function of both health departments and public school, and is being carried on most effectively through these channels.

In bringing together a larger group of nurses and bringing these in closer touch with other health workers, the viewpoint of the individual nurse is broadened and there is more opportunity for generalization of services. Nurses who would otherwise work alone or in smaller groups with a single age group or phase of work, are brought in touch with health work as a whole and get a better perspective of their own part in it as well.

The difficulty of building up and maintaining a public health nursing personnel in schools, county unit, and in any group of visiting nursing, due to the high mortality in the ranks from matrimony,

is pretty generally recognized, and is a factor to be considered in the success or failure of their program.

In the affiliated group the generalized service, system of supervision tend to distribute the loss of experienced workers. In short, the larger body stands shock better.

To the health department itself the association brings a larger personnel. To this increase in personnel it gives a clearer understanding of its objectives and a familiarity with its machinery, laboratories, and clinics, which will be more effectively used in the field to which the nurse has access—the home and school.

With the increase in personnel comes the contribution of an intimate contact with family life that has built up by the bedside nurse and extended to all public health nurses by her services and the spirit which developed.

Since the health department has gone beyond its first objectives of "community sanitation, the control of communicable diseases, and the use of sera and vaccines" to the control of infant mortality and tuberculosis, this contact with the family becomes increasingly important. Accomplishment of results along these lines depends upon the teaching of personal hygiene, not only to groups by mass method but individually.

The post-natal nurse in her bedside care to the mother and newborn baby has a strategic place at a most critical time, not only to teach for the future, but to battle for conditions vital to early infancy. The tuberculosis nurse by her own protective technique teaches most effectively. Her interpretations of sanitary and economic conditions to health authorities, viewed from the very heart of the family, are very valuable.

Last, but not least, the Coöperative Nursing Association brings to the health department an interested lay board, which, after a few years, begins to concern itself with other projects belonging to health work that touch the nursing service and becoming increasingly active in putting them across.

May not this same board be more or less of a barrier to protect health work from political control?

Rural nursing developing later, and along educational channels and in closer line with health department, has not followed the same course of development. Just what the relationship between bedside nursing and official health work will be cannot yet be determined. The consolidating of city and county health units are affiliating their nursing services, and are stimulating both groups.

DISCUSSION

Dr. W. S. Rankin, Raleigh: Personally and officially I am as interested in this important subject which has been introduced here by Miss Ross as in any subject in public health work. The time is coming if it is not already here when at least half of the public health workers in this country are going to be nurses. The nurses are really doing the work, they are going into the trenches. They

make the house to house contact. The subject which Miss Ross has brought up here represents to my mind one of the most important questions which public health officers have to consider. To my mind there is not another question in this country of as much general interest as that which Miss Ross has brought up. She raises the question of the relation of bedside nursing to public health work, the relation of generalized nursing to special nursing, and of the application of urban nursing conditions to rural conditions. Now those are living questions; we have to deal with them from day to day.

In the first place, I want to say a word in regard to the generalized nursing plan as contrasted with the specialized nursing plan. It is a question on which the best authorities differ. To show you how unbiased I am, I may state that I have completely turned around in the last twelve months. Let us get an idea of what we mean by generalized nursing as opposed to specialized nursing. It means the employment of nurses for generalized nursing. Ordinarily it means the employment of a nurse and the turning over to her of a certain section of a city, generally five or six blocks. What does she do? She goes into the homes and does tuberculosis nursing, does maternity nursing, does public health nursing, does follow-up work with the school children, bringing them to clinics, etc., and in addition to all of that she does a certain amount of bedside nursing, which is not public health work but has an indirect relation to it. Now, what de we mean by specialized nursing? We mean the employment of a tuberculosis nurse to do tuberculosis work. She ignores everything else. We mean the employment of a nurse to do nothing but prenatal work. The one is a general practitioner; the other is a specialist. Who is right and who is wrong? In a survey of eighty-six of the largest cities of the United States in 1920, the survey being made in 1921 for 1920, over sixty cities had the specialized nursing plan, a considerable percentage in favor of specialized nursing. I found in Detroit a health officer who advocated and used both systems in the city of Detroit, which has a population of one million. They have for 900,000 of that population the specialized nursing plan in operation. That is, they have a corps of tuberculosis nurses who do nothing but look after tuberculosis patients among that 900,000. They go into the homes, educate the patients, follow them up, bring them to the clinics, and keep them coming. Then, for the other 100,000, the general plan of nursing is in effect. That part of the city is divided up, each nurse is given a certain number of blocks, and she looks after all the work. Now, Dr. Vaughan tells me here is the distinction, and I think he is right. If you have to start in the city of Wilmington or Charlotte or Asheville or anywhere else to build up a nursing staff and are limited in funds—and you generally are—you can employ a nurse and in five or six weeks teach her to handle tuberculosis, but you can not train her to do tuberculosis work and prenatal work and everything else, in that length of time. Then you get another nurse

and teach her to do prenatal work. Thus you build up a specialized system. Why do you have it? Because you had not money enough to get adequately trained generalized nurses, or you could not do it, so you fell back upon what the majority of cities of necessity have to use—specialized nursing. Now, go ahead and evolute. This year a nurse is doing tuberculosis work; next year put her on prenatal work, the third year put her on school work. You gradually thus switch your specialized nursing plan over to the generalized plan. The specialized plan is the method of necessity. If you have the money, use generalized nursing; if you have not, of necessity you must use the specialized nursing plan. That is the great trouble, not only with the nursing forces in this country but with the health officers. When you get a doctor to do county health work he may know tuberculosis well, but he may not know anything about maternity work. That is the most difficult problem we have in public health work today. We are forced to use generalized plan for public health work. If it were possible to use the specialized plan and to have an especially trained man for tuberculosis, another for maternity work, etc., using the same man in three or four counties, then we could get somewhere in public health work.

Now, what do we mean by bedside nursing? Here is an old lady who has broken her hip. The nurse goes in and gives her a bath and makes her comfortable. She is not doing public health work; she has no idea of it. But what is she doing? She is meeting the old lady's daughters, some of whom are pregnant, some of whom have little children. She is making the acquaintance of the whole family. Bedside nursing is a means to an end, and not an end. It is not public health work, but you are driving at public health work. Winslow, in his description of the ideal city health department, says that forty per cent of the nurse's time should be given to bedside nursing and the other sixty per cent to actual health work. That forty per cent is to enable you to get the other sixty per cent.

One more point, rural nursing as compared to city nursing. Here is a problem about which we have to be careful in all sorts of rural work. As you expand your area and population you must restrict the scope of your work in function. If you put a nurse in a county—an average county of North Carolina, with thirty thousand people and an average area of over five hundred square miles —I would not pay that nurse fifty dollars a year for generalized nursing. She will do the cause of public health far more harm than she will ever do good. She will so scatter her energies and her work will be so superficial that she will discredit it. But if you put that nurse in a township, where she will have about three thousand people, even then you have about two or three times as much as she can do. The only thing that makes an impression that lasts is quality of work, not quantity. That is so in every line. So you can not have the generalized nursing plan under present rural conditions. It would take at least ten or fifteen nurses for generalized

nursing in a county, so county nursing means specialized nursing—the tuberculosis nurse not allowed to handle maternity work, not allowed to handle school work, not allowed to handle infectious diseases.

That is about what I wanted to say—that bedside nursing, sick nursing, is a means to an end; that while we have generalized nursing in a few cities at the present time, and while we must hold that as an ideal and strive for that, for the present we must hold to the specialized plan of nursing for our rural work.

AFTERNOON SESSION
HEALTH WORK IN THE SCHOOLS

R. L. Carlton, M. D., City Health Officer,
Winston-Salem

The aims of this activity are, as they have been for some years, health protection, correction of defects, and health promotion. As school health work has progressed in North Carolina its scope and effectiveness have increased by the addition of more workers. There are now on the staff for school work in many communities, school physician, nurses—white and colored—nutrition worker, Modern Health Crusade Leader, dentist, physical education teacher, and in addition to the regular grade teachers, special teachers of health correlated with one or more subjects.

If the medical inspection which should be given every child on the opening of schools in September finds them to be in better physical condition than in previous years, it means there has been rather thorough and full coöperation and correlation of the services of doctors, nurses, dentists, special workers and teachers with the fundamental aim in mind at all times—the health of the child.

Health service in schools is much less capable of routine methods than is the work of the teacher. Let us visit one of the schools of some North Carolina city and observe the public health nurse and some of her duties as she works with doctor, dentist and teachers.

The nurse reports at the principal's office at 8:45 a. m., already having taken an automobile load of children (a dozen or more) from this school to the dentist's office at the health center, and passes on to the medical service room. Ten children who have been absent more than two days, are waiting for her permission to return to their class rooms.

James is a well-known malingerer with the usual story of a headache and the nurse signs his slip without comment, knowing that the undisciplined home conditions are already being studied and dealt with by a social agency and that she herself must visit the home constantly until the baby is past the age when careless feeding is disastrous.

Louise reports the arrival of a baby brother and the nurse reminds her that he must be registered at the City Hall by his father, like all good citizens.

Mary was sent home a week ago with instructions for cleaning her infested head, but the condition remains unchanged. Defiantly she declares that her mother says her hair is all right and that the teacher must take her back. The child's respect for her mother must not be weakened, but the quiet talk which is needed to handle the delicate situation will not be possible until later in the morning, so Mary is enrolled temporarily as nurse's assistant. The stories of the other children are quickly considered and they return to their class rooms. One boy, however, must be sent home because notice has not been received from the quarantine officer that the scarlet fever card is off the door. Three other children are sent by the teachers from the class room to the Medical Service Room.

Alice has red eyes, is sneezing and is found to have temperature, so she must go home with a form notifying the mother that the family doctor should be called. The nurse has little doubt that Alice has fallen a victim to the prevailing measles and records the names and class rooms of the two brothers, for use in the event of a positive diagnosis.

William appears with a sore finger. William's mother is subnormal mentally and the task of teaching her to give the necessary care is difficult. Carefully, the hand is bathed and dressed and permission is given to come every morning for a clean bandage.

Johnny's teacher has discovered that he comes repeatedly to school without breakfast. Hesitatingly, the loyal child reveals a condition of neglect that needs the skillful handling of the social worker. The nurse knows that the social worker will meet closed doors unless a welcome is prepared, so she secures the boy's consent to talk the proposition over with his mother, hoping that the next step will reveal itself.

The school physician is not expected until recess, and the nurse seizes the half hour remaining to make a class room inspection. Her choice falls upon a primary grade which was inspected only a week ago, but diphtheria is prevalent in the neighborhood and the little tots cannot be relied upon to report sore throat to their teachers. The recess bell rings—but all the throats were clear and she leaves with a light heart.

Arrangements have been made with the school physician for the complete physical examination of eight children. Mothers of these children have been invited to be present but only two of them came. Four children are from the first grade, three from the fourth and the eighth is a third grade child selected for special examination because he shows marked evidence of malnourishment.

The plan of studying a few children with the assistance of their parents is one which is to be preferred to the rapid examination of many, because the parents' coöperation must be secured if the defects are to be corrected and health habits established. The mother will welcome and understand suggestions given to her by the doctor when she would misunderstand or resent them if received through the child,

in addition to which the history that the parents can give is necessary to thoroughly understand the condition of the child.

The first child examined this morning is found to be without defect, but the mother is appreciative of the interest shown and considers her time well spent. She is a member of the Parent-Teachers Association, and suggests that the school physician should address the association, explaining the purpose of the health work which is resented by some of her neighbors and their private physicians.

The doctor turns from an examination of the next child to question the mother as to the family history, and the public health nurse is finally instructed to arrange for an examination of father, mother, and children in the syphilis clinics. Social agencies have had this family under their care for over a year without knowing of the underlying cause of the poverty and inefficient home management.

The mal-nourished child is the oldest in an apparently healthy family. The mother's history reveals the fact that the first husband, the father of this boy, died of tuberculosis when his son was four years old. The second husband is out of work and no occasion having arisen since coming to the city for calling a private physician, the public health nurse will arrange for the boy's examination at the tuberculosis clinic connected with the department of health. In the meantime an appointment for dental service will be made.

The doctor having completed his examination, the nurse now brings to the medical service room from two first grade rooms, which have previously been inspected, fifty children who have never been immunized against smallpox. These children have all brought from their parents requests that they be vaccinated in school. Nurse assisting, the doctor vaccinates the group of kiddies and they are quickly returned to their proper rooms.

The public health nurse returns to Mary, who has proved to be a capable assistant, and has a quiet talk with her in the medical service room. The result of the confidential talk is that the nurse decides to make a home visit on the only day of the week when the wage-earning mother is at home and to help her with a general clean-up of all the heads of the family.

Responsibility for the personal cleanliness of the children must not be assumed by the nurse if she is to conserve her time for duties which cannot be undertaken by the teacher, but sometimes the Marys in the school need the combined efforts of teacher and nurse.

The Health Service in the schools is a part only of the work of school physician and public health nurses. The doctor visits another school until three o'clock in the afternoon when he starts on a round of home visits which may be concerned with the control of communicable disease.

Owing to the visit of the doctor the nurse has spent the entire morning in the school. At noon she reports to the supervisor and enjoys lunch with other members of the nursing staff. In the afternoon, she will make home visits. Tomorrow morning she will readmit school children, will examine three classes for evidence of communic-

able disease or physical defect, and will follow up each inspection with a health talk. Possibly she will tell the children stories about Good Fairy Health and her friends, or she may assist the Crusade Leader in putting on a health playlet with a group of children. With the teacher's coöperation, she is helping the children to establish good health habits, and finds that the appeal of self-interest has proved to be less effective with children than that of class honor or the State's need for healthy men and women. Once having been seized with the desire to be healthy and strong, the child must realize that health depends upon his habits for the seven days of every week in the year, and realizing he must learn self-discipline.

Of the three aims laid down for a School Health Service, the third—Health Education—is the one which must constantly be emphasized by a department of health, not only in the schools but in the homes. Tradition and habit have identified doctor and nurse with remedial work, and the inexperienced among them become absorbed in that branch of their service.

While the Health Service in the schools places the emphasis upon health rather than upon sickness, it cannot escape responsibility for securing remedial treatment, and is much concerned with the defective and the underprivileged.

Physical defects encountered in the schools are many and varied. Coöperation in having defects corrected is not always all that could be desired. For the pre-tubercular child and those with other conditions which will respond to the treatment, there should be established open-air class rooms and possibly a preventorium. The mentally defective and "dull" children have been separated into special classes which is as it should be.

The large numbers of children having diseased tonsils and adenoids by no means receive the attention or sympathy they should have. Many such children are selected for treatment who do not get it because of lack of funds with which to pay doctors' and hospital bills. Clinics to take care of this class of children are urgently needed.

In dealing with tuberculosis also, the great need of sanatorium beds for children is frequently before the school doctor and nurses. When a boy or a girl is discovered to be tuberculous it is almost a tragedy that there are no hospital beds to which they may go.

Dental defects, especially those of the younger children, are well cared for in the health department clinics.

The underprivileged child is still another concern of health workers in the schools, since poverty and disorganized homes are both the cause and the result of lack of health. Increasing numbers of children are undernourished and so are unfit to carry on their school work, with the result that free distribution of milk or free lunches have been instituted to deal with the situation.

Modern Health Crusade. The Crusade is on solid ground in North Carolina. In my city fully a hundred classes are being conducted, in which are enrolled more than 4,000 boys and girls. These children are learning in a positive way what good health is and what

it means. Their little chores, the nice stories, the spirit of rivalry, playlets to dramatize health, posters and essays and contests of various kinds keep them interested. Teachers are just as interested as are the children and their splendid coöperation is making possible health instruction of the best type.

One example of the growing interest of the children in health is shown by the fact that they purchased from the Crusade leader during the last two months nearly three thousand tooth brushes which she was enabled to secure for them at five cents each and with which is given free a small tube of tooth paste.

Nutrition Work. The need for nutrition work among the children still exists. During the three or four years that this work has been a part of the health program decided strides have been made. In some localities the method of the nutrition worker has been changed from one of intensive training and teaching of a relatively small number of children in selected classes to one of rather general supervision of the nutrition program, directing and encouraging the various groups but leaving actual teaching methods to the teachers. The plan is proving to be a decided improvement.

It is necessary in some instances to supply milk without charge to children who are underweight. This has been a valuable addition to the lunches the children might bring from home. The nutrition leader and nurses find, however, that some children bring no lunch, that others have lunches of very poor quality, and that in many instances the family is not able financially to buy the things their children should have to eat. This condition has stimulated the establishment of lunch rooms at the schools where a nutritious hot lunch is served to children at cost. Some children in every school need to have furnished at no cost to them a nutritious well-balanced meal at noon. Children for this free lunch service must not be selected hit or miss, but thorough home investigations must be made by one or more workers of every child before his name is placed on the list for free lunches. This service by no means desires to pauperize any child or family, nor does it wish to leave off any deserving needy boy or girl; on the other hand it uses every precaution to so protect the list that those families who can and should support themselves do so. Funds making possible this free distribution of milk and lunches have been derived from various civic clubs, Parent-Teacher Associations. women's clubs, etc.

Physical Education by Teachers. It is a pleasure to direct attention to the work being done in the schools by teachers of physical education. This program has been made a part of the curriculum in all the elementary and high schools. A corps of supervisors and teachers devote much time to the various means of teaching health from a physical education standpoint. Posture, stunts, games, poster making, dramatics, etc., are all employed to teach health. The physical education program is on a much sounder basis than ever before.

Medical Inspection of Health Service in the schools was originally designed to deal with the child, but experience is proving that it is

of great value to the community as a whole by providing an opportunity for the department of health and coöperating agencies to deal with home conditions revealed by physical defects or faulty habits in the children. Experience is proving also that the best results are obtained from a Health Service in the schools when close coöperation is maintained between doctors, dentists, nurses, teachers, and social workers, and, above all, with the mothers and fathers. If there has been this spirit of coöperation, perhaps one of the mothers mentioned as being present when her boy was examined by the school physician, as she accompanies her boy home from school at the noon hour, reflects upon the many provisions now made to keep children healthy, as compared with conditions when she was of school age. She considers how the food used in her home is subject to protection by health inspectors; how the ice cream in the corner soda shop which they pass is regularly tested; how individual drinking utensils are required in public places; and how so many efforts are made to educate both children and parents in the principles of healthy living. She is an intelligent mother and determines not only to avail herself of these opportunities offered but to talk with others about them—for she has come to understand that these measures have already resulted in increased happiness and longer life through bringing about less sickness and suffering, and the building of healthy bodies.

DISCUSSION

Dr. A. C. Bulla, Raleigh: Dr. Carlton has covered the school work very thoroughly. He has mentioned the multiplicity of duties that a public health nurse must do in the school room. I sometimes hardly know where I stand in doing public school work. There are so many agencies working through the school to accomplish their objective that sometimes I hesitate to spend as much time as I should in the school room to do what ought to be done, because I feel that I am encroaching upon the duties for which the school is really established—to educate the children mentally. Yet we all know that the physical condition of the children must be looked after, and the health authorities are responsible for that particular kind of work. There are questions yet in the minds of health authorities as to how far the health departments should go in doing school work, whether it belongs to the health department or whether it is a part of the educational department. Personally, I believe it belongs to the health department, but I think we should specialize in certain specific things in the school. We are doing so much in a haphazard way that we do not get down to the real facts and the things that should be done. For instance, if a case of diphtheria occurs in the school room, how many of us know specifically how many of the children in that room have had toxin-antitoxin or a negative Schick? If we had that information, we should know how much alarm should be caused by that condition in that school room. But we have not the information, and we pass it up, quarantine the case, immunize the contacts, and release the case after a few weeks, and we have

cases occurring all through the term. If a child has any communicable disease we should know how many of the children in that room have not had that disease. We should find out why a child is at home, and if at home, if there is a public health question involved in it. The school nurse is responsible for finding out the condition and why the child is at home. The Modern Health Crusade, nutrition work, getting defects remedied, are all important, but, as I say, we should specialize on these particular things and do them thoroughly.

THE FUTURE OF PUBLIC HEALTH

E. T. Hollingsworth, M. D., Health Officer
Sampson County, Clinton

DeCarte with vision almost prophetic wrote years ago "If ever the human race attains its highest development mentally, morally, and physically, the science of medicine will point the way." DeCarte had in mind of course Preventative Medicine. Lord Beaconsfield said "The Public Health is the foundation on which rests the happiness of a people and the power of a country."

The medical profession is charged with the responsibility of leadership in all matters pertaining to health. An important part of this is the education of the people that are depending on us to tell them what is needed along this line; if we say nothing, they assume, and have a right to such assumption, that we deem the situation adequately cared for. We all know that there is a deplorable need along this line, and it is our sacred obligation to make the facts known to the people, and to use our every influence to institute such measures as will result in the education of the public as to the care of children.

The object of Preventative Medicine is not only to prevent unnecessary sickness and lessen the prevalence of disease, but to preserve health, to increase physical efficiency and to improve the race. Preventative Medicine touches life at every point of activity. From the time a child is born into the world until the end of a normal life, it is the business of Preventative Medicine to enable that life to attain its highest possible development of the powers of body, mind and soul. This indeed is the future of Public Health. One hundred years ago one-half of the babies born in this country failed to reach the age of two years. A few years ago one baby out of every five in the U. S. died before reaching one year of age. At the present time only one out of every seven dies, and we can confidently look forward to a time when no baby will die a premature death, because of ignorance or neglect.

When children come to the public school, or babies to the baby clinic, they come as material consecrated to the service of the State, to be transformed into efficient citizens of the State; and health lies at the very foundation of citizenship. We are no longer content to develop the mind often at the expense of the body, but demand that

every possible safeguard and protection shall be thrown around the child in school whereby he may come at the end of his school life to strong and sturdy physical efficiency to meet the demands of our complex modern life. To do this means first of all, not only better babies should be born, but the very best babies should be born; and the mother needs medical supervision before birth of a child, and it is up to the physician to meet this challenge squarely.

The charge is made today that the children of our rural schools and small town schools are physically inferior to the children of our city schools. Experience and observation leads one to believe that this charge is substantially true.

It is plain that something more than the natural opportunity of the country for pure air, clean living and plenty of hard work, is needed in order to enable the boys and girls from the rural schools to maintain a physical equality, where heretofore a superiority has been conceded. Here again Hygiene and Preventative Medicine must be the answer to the problem.

It is becoming more and more apparent that our social problems are physical rather than political, and that much of what we are pleased to call charity and correction is misguided and far from being common sense. We are beginning to realize that a large part of insanity, feeble mindedness, crime, poverty and delinquency may never be cured, but they may be prevented.

Insanity is a disease of which 25 per cent is syphilitic and 25 per cent alcoholic, both of which are to say the least, preventable. Instead of prevention, however, we foster insanity by law and tax ourselves to build and maintain more and greater asylums to care for the result of our own false notions of charity and social and political expediency.

Alcoholism is one of the chief causes of poverty and crime, yet we patiently bear with its enormous burden of expense and sorrow, rather than face it as it is—a problem of public health. Alcoholism in its most insidious form (that of patent medicine) is a veritable Dr. snatch coin, and Mr. Hyde, holding out an alluring promise of cure with one hand, is striking a death blow with the other. Notwithstanding this fact, a new patent alcoholic cure-all is fostered on the public every week; and the American people spend annually for worthless, injurious habit-forming "dope" more than two hundred million dollars. But by far the greater number of diseases which conspire to kill or cripple, attack in the years of non-age. Infants and children, who have no opportunity to choose for themselves, are entitled to consideration from the State. The public health of the future will accomplish its beneficent work along three lines, namely; 1st by legislation. There will be more and better health laws, but there will also be more of public health in all laws; 2nd by coöperation between the physician, teachers, parents and the health officials. 3rd (and by far the greater) education. Education through newspaper articles, moving pictures and demonstrations. The educational feature is best accomplished through maternity and infancy

work. Here the doctor and the nurse come in direct contact with the parents and children in the so-called stage of being well, as these clinics are held for well babies and not sick ones. Here is where the physicians have the opportunity of educating the parent by having personal contact.

THE MATERNAL AND INFANT HYGIENE UNIT OF PUBLIC HEALTH WORK IN FORSYTH COUNTY

J. Roy Hege, M. D., County Health Officer
Winston-Salem

The Maternal and Infant Hygiene Unit of Public Health work was instituted in Forsyth County the first of July last. Dr. Hugger of the State Board of Health gave us his personal assistance in the formation and carrying out of plans. Miss Harte Oliver was placed in charge as nurse.

During the first month Miss Oliver devoted her time entirely to home conferences and the registration of babies under six years of age. A card informative of such matters as nursing, feeding, bathing, clothing and habits of baby was used for registration. The mother was thus given some instruction in infant hygiene and the importance of attendance at baby clinics.

During the second month our clinics were opened in seven community centers with Dr. Butler as baby clinician. The attendance was disappointingly small—there being 44 children under two years of age and 8 of pre-school age. On intensive inquiry we found the chief cause of non-attendance of mothers was lack of means of transportation. We therefore conceived the idea of free transportation for mothers by means of the Consolidated Schools' busses. This resulted in the establishment of a bus service for the express purpose of transportation to and from the clinics. We secured the busses from the Board of Education. They were routed and scheduled by our department, the route generally being the same as that followed in the transportation of school children. Sometimes other districts are also included. As a direct result of this free transportation, the attendance at the clinics rose to 131 children during the third month.

As a second means towards the increase in attendance and in order to get into touch with a more needy type of child, we solicited the aid of certain Church Auxiliary organizations, such as Missionary Societies, Women's Clubs, Book Clubs, Sewing Circles, Rural Supervisor's Clubs, etc. After a few months, however, we found our ideal was still unattained and hence we started the organization of mothers and women interested in maternal and infant hygiene work. This organization we called the "Mothers' League." One has been organized in each community possessing, or desirous of possessing a clinic. It is through the League we see and hope to solve our community problems. The League as does any other Civic Club, possesses officers and committees, the latter being several in number—one for the purpose of visiting and bringing to the clinics

more mothers and babies, especially concentrating on the illiterate mothers whose attendance we found poor—one for the soliciting of new members, both actual and expectant mothers, etc. We have a speaker for each League meeting and we hope also to use our moving pictures in this connection.

During the months of January and February, we suspended the clinics owing to the bad weather and also in order to allow our funds to accumulate for the purpose of starting the prenatal clinics this year. The League meetings were continued, however, the nurse conducting them, and they were virtually clinics, owing to the attendance of babies and children of pre-school age. During this time we were requested to organize clinics in hitherto new communities. These requests were responded to by the Mother's Leagues in these communities. The League thus became a forerunner of the new clinic points. With success assured therefore we established four new clinic points.

The feature has also been added of demonstration of a properly clothed child—how to make and use a mustard plaster—the use of the enema—administration of medicine—preparation of foods such as lactic acid milk—best type of nursing bottle—things required by the doctor in the home of the expectant mother—and such else of equal value.

On March first we opened our clinics in eleven organized centers. The registration in the clinics up to and during March was 544 children. The attendance during the month was 165 children. We have made during the past months on our infant hygiene unit of work, 1,963 home conferences, and registered 1,800 babies two years of age and older, and 176 of a possible 585 prenatal cases in a rural population of 28,000.

Now let us see just how many babies we have in Forsyth County. From a study of our vital statistics reports we find that during the years 1923 and 1924 we had 2,015 babies born in Forsyth County. Of these 213 died under two years of age, thus leaving 1,802 living. Of this number 15.5 per cent or 242 are colored. There were therefore 1,560 white children under two years of age. Of these 1,560, 222 or 1-7th are registered in our baby clinics; 600 (less than ½) are registered in the office of the Health Department. The fact that we regret most is that the majority of these 222 babies come from the better homes and only a few from the families most in need of help. We are of course primarily desirous of benefiting this latter class. Even so I am well pleased with the start we have made in infant salvage.

We have registered 176 prenatal cases out of approximately 585, this figure being deduced from our birth statistics. Roughly, about three-quarters of the births per year should approximate the number of prenatal cases. We hope to increase the number of registrations since we have started the prenatal clinics. Dr. Spicer, who limits his practice to O. B. work in Winston-Salem, has been chosen prenatal clinician. He started on the first of March and is now devoting his

time to the giving of lectures to mothers attending the baby clinics, stressing the importance of proper supervision during expectancy—demonstrating properly made baby clothes and the necessary articles to have on hand at the time of confinement. Dr. Spicer is anxious to obtain the assistance of all the mothers attending the clinics and Leagues in reaching the expectant mother. During the first month we have found the attendance of expectant mothers low, as is to be expected.

Just a few words about the midwife. In Forsyth County during the past two years she attended 62 white mothers during childbirth—35 in 1923 and 27 in 1924, or in other words, 3.7 per cent of the total number of births in 1923 and 3.4 per cent in 1924—a decrease of .3 per cent. There were 1,888 white births in Forsyth County including Winston-Salem in 1924 and only 49 of these were attended by midwives. The colored births present a different picture. During the two years, the midwives attended 101 births—48 during 1923 and 53 during 1924—an increase of 10 per cent. Including the city of Winston-Salem there were 481 colored births attended by midwives. We have not yet outlined a program for the midwife, but this will follow.

I consider this maternal and infant hygiene unit of work the most fascinating and the most valuable of any unit of Public Health work. It is Preventive Medicine of the most valuable nature. One has a *feeling* of satisfaction on one's last round of a successful typhoid and diphtheria vaccination campaign, but there is a greater *degree* of satisfaction when one returns from a baby clinic with 35 children in attendance. Dr. Summers of Baltimore claims the largest baby clinic in the world. His record days shows 150 babies from an urban population of 1,000,000 people. A baby clinic of 35 children from a rural community of 28,000 population compares very favorably with Dr. Summers' record.

It is my opinion that through the agency of our baby clinics we can reduce considerably the death rate of children under 5 years of age and make our counties' vital statistics report bear striking witness to our activities. In fact, I believe that I am not far wrong in saying that by conscientiously stressing this unit of public health work we can add 10 years to the average span of life in our respective counties.

DISCUSSION

Dr. J. W. Williams, Washington: Dr. Hege speaks of the satisfaction of going from a clinic attended by thirty-five children, so he must feel very good over reporting so much work accomplished since last July. It must be a good feeling for him to be able to report that. This is new work to me, and I do not feel that I am competent to discuss this paper. The problem in my county is the midwife problem. Dr. Hege says that 3.4 per cent of all the births in his county in 1924 were attended by midwives. All he needs is to get his county to pass a law prohibiting the attendance by a midwife.

I should like to know how Dr. Hege was politician enough to get the Board of Education to lend him those trucks. Did he pay for the drivers or for the gasoline? In other words, how did he bring it about? Another question, about those mothers' leagues. How is it possible for a man to sell that notion to the people enough for women to get out in automobiles at their own expense and ride over the county to ask these other mothers to attend the clinics? If he would go into detail a little it would help us. The biggest thing is to get those patients to the clinic, if we decide to do it that way. Dr. Hege gets the mothers there. Is that a better plan to get across to the mothers, or can a well trained maternity nurse make individual home calls and get just as much over to that mother? I wish to congratulate Dr. Hege upon the immense amount of work which he has done, as shown in the report.

Dr. W. T. Ruark, Elizabethtown: I should like to say something of the maternity and infancy work in Bladen County. During the month of February, during which Dr. Byrd was in the county with me, in three weeks' time we had 95 babies present at a clinic in Bladenboro, 65 at Clarkton, and 45 at Elizabethtown in one week. During the rest of the time we examined 75 midwives, gave a six-hour course of instruction and demonstration in aseptic procedure and care. We gave them two courses of instruction. This work seems to be very popular in the county, and the clinics are still being very well attended.

Dr. C. W. Armstrong, Salisbury: This paper of Dr. Hege's is very interesting to me, and it is certainly on a very important subject. I think every health officer will be interested in his method of getting out in the highways and byways and making them come in. I wondered how Hege managed that; if in loading up a truck with women he did not have comments from the people along the roadside. I should like to know how he does it. We can not get expectant mothers to the clinics in our county; they simply will not come.

Dr. C. L. Outland, Greenville: I am glad Dr. Armstrong just asked that question, because we have been unable to get the prenatals out. I believe, however, we can do more with the nurse in the home, with the prenatal cases, than we can trying to get them out. Of course, the clinician can not get to the home, but I believe the nurse, if properly instructed, can get it over to the mother. I believe the diet lists, instructions for making the baby's clothing, etc., will help a great deal. In my county we have a much larger midwife problem than Dr. Hege has. Over half the babies are delivered by midwives. Our aim has been to register a hundred babies a month, and register at least fifty prenatals, and since Christmas we have nearly reached that. If we run our program long enough we hope to get at least fifteen hundred to eighteen hundred a year.

As to attendance at clinics, we find that our first clinic is usually the easiest, and the repeating clinic is the hardest. We try to use every kind of organization that will work with us. Usually the women's clubs and the parent-teachers' associations are very glad to coöperate. Our nurse goes usually to the parent-teachers' association, because we have more of those than of women's clubs. The president will appoint a committee to work with her. In that way we have found it helped considerably. I think if a stranger comes around with someone who is known it shows there is no fake, no patent medicine to be sold. As to the urinalyses, etc., we have been doing that with, I think, some result. I have heard one or two doctors say such-and-such a patient had been down because the nurse said there was something wrong with her urine.

Q. I should like to know how many pregnant women Dr. Hege got out to these clinics—that is, in figures.

Dr. W. S. Rankin, Raleigh: I am very much interested in the plan of attack on this maternity and infancy problem that is developing in a few counties in North Carolina. Dr. Taylor and I and a few of us who are familiar with it have not been talking about it very much, because we want to get on a little further with the plan and with the details and see how it will work out before we begin to propagandize it for general adoption. We are going upon the principle that the county can control the practice of midwives. That is not theory; it is fact. I have called attention time and again in this society to the very exceptional law that a county has. I believe it is one of the most distinctive things in the state in public health work. It is a law providing "that the county boards of health may make such rules and regulations and impose such fines and penalties and pay such fees and salaries as in their judgment are necessary for the protection and the advancement of the public health." I defy any man to write a law covering a broader field. The interesting thing to me about it is that that law is taken so little advantage of. Of course, under that provision your county board of health has just about the same power to pass rules and regulations and local laws as the legislature has for the state, with all sorts of advantages over the legislature. The legislature can meet only once in two years, because it costs too much. The county board of health can meet once a month if it wants to, and it can pass a law this month and, if it does not work out, can repeal it in a month or two. Under that law any county board of health can pass a practice law for midwives, any county board of health can say that midwives can practice only under certain regulations. Any county medical society can go to the county board of health (on which it has two members) and say: "We want the practice of midwives—illiterate, careless, dirty midwives—restricted." And the county board of health can restrict it just as much as they wish. It can require them to pass an examination; it can give them instruction. It can cut out by the first examination at least fifty per cent of the midwives practicing. In Beaufort County they had 112 midwives.

They passed a law requiring them to get a permit, and after a certain date making it a misdemeanor for any midwife to attend a case of pregnancy or labor without a permit. With the permit they gave instructions, not so much as to what they should do as to what they should not do. They came up for examination and, if they passed, were given a permit, not for life, but one requiring renewal. That cut the number of midwives from 112 to 52. It is just like the dairy problem—when you put in the right kind of regulations you get rid of the one- and two- and half-dozen-cow dairies and make your dairy problem easier to supervise. So with the midwives. Instead of having sixty of the most illiterate, they got rid of them altogether. The others are now under permit, which will have to be renewed next January. That permit is not only temporary, but conditional. There are certain requirements which the midwife must meet in order to keep her permit. She has to report each case of pregnancy ten days before labor. They have to tell the health officer, and his nurse goes there and finds out whether that is a fit case for the midwife to attend to or whether it should be in the hands of a physician. If it is a primipara, if it is a case with a history of difficult labor, or a case with swelling of the hands or feet, or a case with albuminuria, the nurse can take it away from the midwife and that case goes to the medical profession, where it ought to go, provided the medical profession has arranged with the county health department to take care of it. If that case is not a midwife case and the family is in position to pay the usual fee charged in obstetrical cases the health officer tells the family they can not have a midwife. Of course, if the midwife attends the case after you have told her that she can not, then she loses her permit, so she will not attend the case. But suppose the family get mad. You have to educate them so they will see the necessity of having a physician. Suppose it is an indigent case and you step in and take away from that woman her only means of attendance. Now, you have to arrange for that, you have to take it up with the county medical society. You refer that case to the nearest doctor. He will take it, not for charity, though some of them insist upon doing that, but the county ought to pay a fee for that attendance. But here is the main point—you have complete control of this problem. You can go on year after year decreasing the percentage of cases attended by midwives. You have the responsibility for decreasing the maternal and infant death rate.

Dr. J. E. Smith, Windsor: I should like to know how Dr. Williams knows he has only fifty-two midwives. My county is not far from his. This week everything is lovely; I have every midwife registered. Next week I shall hear of two or three more who have been working for a lifetime.

Dr. Rankin says you can go to the county medical society and find out what they want, but they do not know what they want. The midwife problem is one of the most difficult that I have ever had to deal with. If you let midwives work, the doctors think you

are working against them; if you don't let them work, people think you are trying to put money in the hands of the doctors. I should like to know how Dr. Williams manages it.

Dr. E. R. Hardin, Lumberton: We all realize that the midwife problem is a huge one. We can not get ird of all the midwives at once, but what we should try to do is to get rid of the most ignorant and vicious type of midwife in the beginning, to make the others more competent, and to train the younger ones who want to go into the work. I find that some of the younger ones who want to go into the work are really capable of learning something, and that we can train them. I think this is the only way to deal with the midwife problem; and that in a few years we shall have fewer and more competent midwives; midwives who will not be dangerous; but will be a real help to the physicians. I believe physicians will come to appreciate this fact. So far, I have not heard any criticism from physicians, laity, or any one else about the restriction of midwives, or about getting rid of midwives. We started off with somewhat over two hundred midwives, and now have a little over a hundred. I began alone several years ago, without any nurses, and have put on an intensive course of training. I found that some of those that attended the classes, did not qualify, and we will eliminate twenty-five or thirty more in the near future. Personally, I would be surprised if in dealing with anything that has as much tradition back of it as midwifery there were not some criticism. We have to expect some criticism. I have had practically no trouble so far in getting rid of the ones we have eliminated. I prosecuted one of the vicious type, a few days ago. She went around boasting that midwife instruction was all foolishness and that she did not have to attend classes. She came to one meeting, turned up her nose, and walked out. I thought it wise to make an example of her at once. I think if you prosecute a few of this type it will go far toward keeping the others in line.

Dr. Byrd, Raleigh: The question of the midwife, we believe, from our experience in the last twelve months, is one the proper solution of which, and the proper way to eliminate the midwife ultimately, is by instruction. I have had a few helpful suggestions from the various county health officers over eastern North Carolina. One is that instead of holding a class for midwives once a year you hold a class twice a year. It has certainly been our experience that the more you instruct midwives the less they are going to do. Another thing, the North Carolina midwife, we believe, is willing to obey the law and to take instruction, and by educating these midwives and telling them the donts and shalt nots we believe they will obey the law. There will be just enough who don't to make examples of. The course of instruction includes physical examination and then instruction. The midwives whom we examine and who we find have the dread disease which is most likely to bother them in their practice are most likely willing to quit practice and take

specific treatment. Most of the midwives are willing to be instructed. It is left up to the county as to how it shall handle its midwives; each county is a law to itself in this matter. The next measure is the employment of all-time maternity nurses. That is a profession in itself. It requires a nurse of extreme tact and talent, with a good deal of aggressiveness, a nurse capable of meeting parent-teacher associations, women's clubs, and all bodies of that class. If the maternity and infancy nurse tries to do all the work herself she is not going to get done all we want done. She is bound to interest others in order to hold the clinics and get the people out to the clinics. That is one part of her work, to prepare for the clinics and pave the way for conferences.

Dr. Carlton has given us a very able way for handling the children in the schools. The school age is above the sixth year. The errors which he brought to our attention should be corrected before school age. We believe the best way is by the clinics. Get the children out to the clinics and examine them, and by the time the child gets to the school age all the preventive work should be done for that child. Toxin-antitoxin should be given, because that age is the most susceptible to diphtheria. Typhoid vaccination should be given; smallpox vaccination should be given. Deformities should be corrected; errors of refraction corrected. If children are mentally defective it should be ascertained before that time. All the problems can not be met and solved at once, but as time goes on the problems will very largely be solved.

Dr. H. A. Taylor, Raleigh: It is rather interesting to note the difference of opinion among public health officials as to the activities a health department should undertake. Some take a rather narrow view stating that the health officer should confine his activities solely to the indigent and needy, others claim for him all the duties in preventive medicine. There are, however, three items of service common to all states, and upon which there appears to be unity of opinion. These may be briefly stated as follows: 1. Maternal and infant hygiene. 2. Control of communicable diseases. 3. Medical inspection of school children.

The field of maternity and infant hygiene we believe presents the greatest opportunity for service by the active and wide awake health officer; it covers a field in preventive medicine which is being sadly neglected at present. The program as advocated by the Bureau of Maternity and Infancy of the State Board of Health for adoption by the various county health units is divided into three distinct items of service, all of which we believe to be dependent upon the other for its ultimate success: 1. Midwife control. 2. Educational measures for prenatal cases. 3. Infant and child hygiene.

Each County Board of Health under authority and direction of Consolidated Statutes, Chapter 118, Article 3, and Sections 7065 and 7066, has the power to prescribe such rules and regulations as will permit the health officer to bring the practice of midwifery under

his control and supervision. The law provides "that the Board of Health shall make such rules and regulations, pay such fees and salary, and impose such penalties as in their judgment may be necessary to protect and advance the public health." Perhaps no law wider in its scope was ever written on the statute books and in accordance with this authority two counties, namely, Robeson and Beaufort, have adopted a law governing the practice of midwifery.

The law provides:

SECTION 1. No person other than a regular licensed physician shall engage in the practice of midwifery without first qualifying and obtaining a permit from the county health officer so to do.

SECTION 2. To be entitled to a permit, the applicant for such shall satisfy the county health officer that she is without serious physical or mental impairment, and free from communicable infection.

SECTION 3. To be entitled to a permit, the applicant for such shall file with the county health officer certification from at least two reputable citizens of the county, which shall set forth that the applicant is of good moral character and not addicted to the habitual use of intoxicants or habit-forming drugs.

SECTION 4. To be entitled to a permit, the applicant for such shall have taken a prescribed course of instruction for midwives, which has been approved by the ..... County Medical Society, and shall have satisfied the County Health Officer that she is reasonably informed with reference to the course of instruction.

SECTION 5. When any midwife shall have complied with the requirements of sections 2, 3, and 4 and shall have been given a permit to attend cases of labor by the County Health Officer, the said officer shall register the name and address of the midwife with the North Carolina State Board of Health.

SECTION 6. Any permit which has been issued to a midwife under sections 2, 3 and 4 of these regulations shall be null and void on the first day of January following its issuance and in order for a midwife holding such a certificate to continue to attend cases of labor, it will be necessary for her to secure a new permit.

SECTION 7. No midwife shall attend a case of labor or assist in the delivery of a woman who has not been approved as a safe case for the care of a midwife by the County Heatlh Officer; provided, however, that this regulation shall not apply when a midwife is consulted in regard to the attendance upon a woman in labor within less than ten days of the occurrence of labor, in which case she shall notify the County Health Officer at the earliest possible time of such a request for her services.

SECTION 8. The permit shall become null and void if it is proven to the satisfaction of the health officer that the following rules and regulations have been wilfully and needlessly violated.

Rule 1. If the midwife has attended or engaged herself to attend a case of labor that is classed as strictly a physician's case by the following conditions:

(a) When the patient has had hard labors with earlier confinements or has had to have her babies taken.
(b) When the mother has had fits or convulsions.
(c) When the mother is dwarfed or deformed.
(d) If the mother is vomiting badly.
(e) When there is swelling of the hands or feet or if she has had dizzy spells or spots before her eyes, bad headaches or urinary analyses show pathologic conditions.
(f) When there is bleeding before the time of labor.
(g) When there are dangerous varicose veins.

Rule 2. If the midwife has attended a case of labor without notifying a physician if the following conditions arise:

(a) Breech, cord, arm or hand, or any part of baby comes first except the head.
(b) If the mother has fits or convulsions.
(c) If the mother is in labor 12 hours and has made no progress.
(d) If the mother complains of a headache and has blind spots.
(e) If there is too much bleeding.
(f) If the mother shows signs of wearing out or is faint.
(g) If there is tumor, swelling or abnormality of the birth canal.

Rule 3. If the midwife has attended a case of labor and failed to observe the following:

(a) Must report birth of baby within 5 days.
(b) Must use eyedrops in baby's eyes immediately after birth.
(c) Must not pass her fingers or any instrument or give any injection into the birth canal.
(d) No drugs must be administered or prescribed by midwives —castor oil or mild laxative excepted.
(e) Must notify some physician of any unfavorable condition existing with baby or mother.
(f) Must notify physician in all cases of miscarriage.

SECTION 9. Any midwife violating any of these regulations shall be guilty of a misdemeanor and subject to the penalty imposed by Section 7066, Consolidated Statutes. The permit of any midwife found guilty of violating any of the aforesaid sections is hereby declared null and void.

SECTION 10. These regulations shall be effective from and after ....., 192.....

You can see that the law is plain, having for its main objective: 1. To teach the midwife when she must call a physician and 2. To teach cleanliness in conducting normal labor.

It is the aim and purpose of the Bureau of Maternity and Infancy to advocate and adopt this plan in all counties where it is adopted by and meets the approval of the local medical society, the first official organization in a county to which the program is presented.

Dr. Hege, closing the discussion: Dr. Williams wanted to know how we put over the bus proposition. Last October I was in New York, Philadelphia, and Baltimore with a group of health officers. In coming back through Philadelphia I went out and looked over the infant and maternal work being conducted by the Philadelphia Health Department. I was filled with enthusiasm. Three days later I came down to Baltimore. Dr. Summers, a Winston-Salem man, has charge of a large clinic there in Baltimore in the University of Maryland Hospital. They had about one hundred babies that afternoon and five or six pediatricians. I was again enthused, so when I got back to Winston-Salem I was ready to tackle anything that came up. So I went to the Board of Education with a plan based on Public Health work among school children. I discussed with the Board of Education our aim in the schools, also what Dr. Bulla had done in our schools, what Dr. Sisk had done, and that this work should be done before the child got in school, and if they would let me have the busses to get the pre-school children out to the clinics we would direct our corrective activities to the pre-school child. They agreed to let me have the busses, without any strings. I asked them about gasoline, and they said never mind about that. The bus drivers were paid by the month, so it didn't make any differenec about that. The bus went on its regular round, picked up the mothers and babies, and returned them with the children to their home. We found some mothers were getting quite a long ride, so we made a little change in the bus schedule. We had the mother send a note to the school the day before saying she wanted to come the next day to the clinic, and in that way we did not overlook any, and we did no unnecessary driving. I do not think we are wasting a great deal of bus service.

The mothers' leagues were formed after we had tried other organizations. The parent-teacher association considered the baby a side issue. There is a great deal more to tell the women of a community regarding babies than regarding schools. It is not difficult to get the women interested enough to go out and do a real service when they are convinced it is a real service. If you ask a church organization to sponsor your clinics, you classify it immediately—it is Methodist or Baptist or Moravian organization immediately—but if it is a mothers' league that eliminates all class distinction.

I believe some one asked why the nurse could not take the place of the clinician. I think the doctor can impress the mother a good deal more than the nurse can with the importance of doing certain things. Of course, the nurse gives this instruction at home conferences if the mother will not come to the clinics, but if she does come to the clinic she will get things that are well worth while.

Another question was raised, how many came to the prenatal clinics. I believe we had more prenatal cases in the month of March attending the clinics than we have midwives in Forsyth County. I imagine there were three or four, on an average, in each league meeting, which would make thirty-five or forty, though that may be a

little high. Dr. Spicer holds these clinics, and the nurse is seeing that we are not spending our fifty dollars for nothing. It takes a woman to get the prenatal case out; no doctor can do it.

THE STABILIZATION OF MILK SANITATION PRACTICE AND STANDARDS

H. E. Miller, C. E., Director, Bureau of Sanitary Engineering and Inspection, State Board of Health, Raleigh

As only "the house that is builded upon a rock" will stand, just so surely only the community that is founded upon all three sides of "the eternal triangle of sanitation" may expect to enjoy its full measure of health and economic development and prosperity.

The three major problems of community sanitation thus presented are:

1. Water supply protection.
2. The sanitary disposal of excreta, and
3. Milk and other food supply protection.

The problem of water supply protection, although by no means fully solved, is well in hand. For a number of years the State has not suffered any water bourne epidemics and conditions of potential danger have in most instances been corrected. Definite progress is being made toward the solution of the problem of sanitary disposal of excreta, although much remains yet to be done in this connection. In 1918, the year before the sanitary privy law was enacted, there were 194 deaths from typhoid fever in the incorporated towns of North Carolina. In 1923 there were 80 typhoid fever deaths in this same portion of our State population. With no water bourne epidemics in either year, and other conditions being normal, as far as is known, improved privy sanitation must have been principally responsible for this reduction. It is worthy of note, however, that seven of the eighty deaths recorded for 1923 are known to have been due to milk bourne typhoid, in one epidemic, and that the only epidemic of typhoid fever which has occurred since then was milk bourne.

Although it is not considered that the full measure of benefit to be derived from better privy sanitation, more adequate sewerage facilities, and better water supply protection has yet been realized, it is believed that further material reduction of the municipal typhoid fever death rate in North Carolina will be realized principally through more adequate protection of the municipal milk supplies. When it is realized in this same connection that for every typhoid fever death there are approximately five deaths from diarrhea and enteritis among children under two years of age, we are brought face to face with the necessity of better protection of our milk supplies.

The State Board of Health recognizes and accepts its full share of responsibility in this connection, and is now prepared to render service leading to more adequate protection of the milk supply.

At the outset it is recognized that the local governmental agency should regulate the milk supply, and can do so to better advantage

than any state agency. Therefore, the activities of the State Board of Health, in milk sanitation are limited to coöperative measures which may be accepted or rejected by the local governmental agency and which any community may avail itself of by request of the local health officer. These measures are briefly:

1. The recommendation of a standard form of milk regulation, together with furnishing, upon request, any advice or information at our disposal, in connection with milk sanitation problems.

2. Assistance in putting this ordinance into operation, or in connection with the execution of any milk regulation whatsoever.

3. A checking service, with respect to inspection and testing, comparable to the service of the State Bank Examiner, by means of which the State Board of Health can certify as to the reliability of inspection and testing upon which grades of milk are established.

A study of milk regulation in the State and the country in general, reveals the fact that practically every city has a different kind of milk ordinance, and a different set of milk sanitation standards. The net result is a chaotic condition with seriously impaired public confidence in the safety of the milk supply, which may or may not be justified, resulting in reduced consumption of milk. On the other hand, uniform standards of water supply safety have become generally accepted practice and there is no lack of public confidence in the safety of public water supplies.

It is essential therefore to stabilize milk sanitation practice and standards in order to gain the public confidence, so that we may have uniformly safe milk, and at the same time increase the consumption of milk.

The first essential step in this stabilization process is the uniform classification or grading of milk, and for this purpose a standard set of specifications or a standard ordinance is essential. It is for this reason, and for this reason only, that the Standard Milk Ordinance is recommended, rather than some other ordinance, because there are many good milk ordinances and many cities with high grade milk supplies regulated under other ordinances.

By way of illustrating its structure and principal features, without attempting to compare the relative merits of this and other ordinances, the Standard Ordinance will be explained.

The Ordinance was developed by the U. S. Public Health Service taking advantage of the knowledge and experience of the best recognized authorities throughout the country. After a year and a half of successful operation in Alabama it was adopted by the North Carolina State Board of Health as the ordinance to be recommended to North Carolina municipalities for adoption.

The ordinance begins with definitions of all terms used. The definitions of the various milk products are standard federal definitions. The machinery clauses with reference to permits, dairy farm inspection procedure, testing, etc., follow. Then come the grading provisions for raw milk, which place the requirements for Grade A Raw as high as it is possible to do, without making them so rigid as

to raise the price of milk, which would defeat the very purpose intended to be accomplished. Grade B Raw milk requires compliance with all of the items of sanitation specified for Grade A Raw milk except certain minor items. Grade C Raw milk requires compliance with all of the items of sanitation required for Grade A Raw milk except certain major items of sanitation. Grade D Raw milk is any raw milk which does not meet the requirements for Grade C Raw milk, or better.

A like set of sanitation items for plant construction and milk handling methods are provided for the several grades of pasteurized milk. The ordinance recognizes Grade A pasteurized milk as safer than any raw milk, but does not permit pasteurization to serve as a substitute in any way for cleanliness and sanitation of dairies. In addition to conforming to all of the pasteurization plant items of sanitation, Grade A pasteurized milk can be made only from Grade *A* or *B Raw Milk.*

The pasteurization requirements are followed by section eight, the flexible section, in which the Grades of raw milk, if any, required to be pasteurized may be specified. If any Grade of raw milk is to be eliminated from the market such as Grade D, for instance, it may also be so specified in this section regardless of whether any grades of raw milk are required to be pasteurized.

The remainder of the ordinance consists of certain enforcement sections, with respect to "Supplementary regrading" and other essential provisions.

The public is already accustomed to buying on the basis of a standard brand, or grade, signifying a known standard quality of product. The grading of milk on a standard basis utilizes this principle for enforcement of the milk regulation, by stimulating a demand for the highest grade of milk which makes it more attractive to the dairyman to produce the best grade of milk, than to produce milk of a lower grade. Thus the milk supply of any community is classified into whatever of the various standard grades into which it may fall, and by the process of evolution, pushed by the demand for the highest grade, the lower grade dairies either rise to a higher grade or they are pushed out by competition and the dairyman who cannot meet the competition has no one to blame but himself. This serves to stabilize the dairy industry as well as to improve the quality of milk. Any milk sanitation program which does not give due weight and consideration to the problems of the dairyman will defeat its own purpose, for if the price of milk must be raised there will likely follow but little increase in the amount of milk consumed.

An imperative first item of consideration in any State-wide activity for the improvement of milk sanitation is a logical workable ordinance for the benefit of towns that have no milk regulation and desire advice with regard to measures to be adopted. The Standard Ordinance is of especial value in this connection by virtue of the fact that it does not represent the views of any one person or group of persons but constitutes uniform practice already in general use.

For the purpose of rendering the maximum service and benefit to the State with funds available the following definite propositions of service are offered and the acceptance of any item as enumerated below does not in any way obligate any municipality to accept any succeeding item:

1. Any municipality may have any information, advice or service at the disposal of the State Board of Health, in connection with the enforcement of any milk regulation upon request of the local health officer.

2. The Standard Milk Ordinance may be adopted with any kind of amendment whatsoever, but it is recommended that it not be adopted with amendments, because if amended it automatically becomes a local ordinance and would be no longer a standard ordinance.

3. The Standard Ordinance may be adopted exactly as it is written.

4. Upon adoption of the Standard Ordinance, assistance may be had in organizing enforcement work and in making initial dairy surveys with the local dairy inspector, for the purpose of assuring uniform interpretation of requirements.

5. During each grading period, an actual field check of dairy inspection, and milk testing may be had by means of which the State Board of Health can certify to the fact that the ordinance is being uniformly enforced, and that the grades of milk as established conform to the provisions of the Standard Ordinance.

The report of the check as provided for above may be, at the discretion of the local governmental agency, retained as confidential information or utilized as an official certification of the status of the local milk supply with regard to reliability and safety, as follows:

Beginning with an early issue of the "Health Bulletin" a page will be set aside which will become the "Dun and Bradstreets" of the milk supplies of North Carolina. The names of all municipalities that desire to be so recorded will appear on this page together with the statement that the milk supplies of these cities are regulated under the provisions of the Standard Milk Sanitation Ordinance and that the inspection and testing upon which grades of milk are established have been checked and verified by the State Board of Health and found to be reliable.

It is within the discretion of any city entered upon this page to withdraw at any time.

Within the past twelve months the following eighteen cities of North Carolina have adopted this plan:

Burlington, Durham, Goldsboro, Greensboro, Greenville, High Point, Lexington, Mount Airy, Newbern, Rocky Mount, Salisbury, Statesville, Tarboro, Thomasville, Washington, Sanford, Oxford and Hendersonville.

In addition, the following seven other states have adopted the plan, Virginia, South Carolina, Kentucky, Tennessee, Alabama, Mis-

souri, Texas, and the cities of New Orleans, Memphis and Rochester, Minnesota, have adopted the Standard Ordinance independently.

This makes possible for the first time an actual comparison of methods, standards, and results obtained, because these factors under this plan are uniform and comparisons made upon this basis are positive, approaching the comparison of dollars with dollars, and cents with cents. Such a basis is absolutely essential for any logical or mutually beneficial discussion of milk sanitation problems among health officials.

All doubt of the authenticity of the record of achievement by any city can be removed through the official certification made by the State Board of Health which is unbiased with regard to each city.

The conception now existing in many instances, among dairymen, that health officials do not know what they are talking about because each imposes a different set of dairy regulations can be eliminated.

The uniformity of milk standards and a means of obtaining official certification of the facts that these standards have actually been complied with, makes possible the exchange of milk surpluses among cities, which will become more important as diversified farming develops.

By teaching the public one time the meaning of a given grade of milk, in terms of safety, and making it possible to secure the same known quality of product elsewhere, the present distrust of any milk except that produced by "My regular dairyman at home," can be dissipated. The primary object of any effort to *standardize* milk *standards* is to instill confidence in the public and thus stimulate the consumption of safe and wholesome milk as a daily article of diet.

Any person accustomed to a given grade of milk produced under the Standard Milk Ordinance may have authentic information with regard to other cities in which he may be able to secure the same quality of milk. This is of especial interest to industries contemplating location, to vacationists, tourists, and to the traveling public in general.

By enforcement of any ordinance the milk supply from the various dairies may be standardized for the community as a unit. By the enforcement of the Standard Ordinance this result may be accomplished with equal satisfaction, and in addition the community milk supply becomes standard with supplies of the other cities, regulated under the same ordinance, within the state as a unit, and through the coöperation of the U. S. Public Health Service, the milk supply of the state as a unit, becomes standard with other states in the nation as a unit. A given grade of milk will then be the same in North Carolina as it is in any other state, and thus the stabilization of milk sanitation practice and standards may be accomplished.

DISCUSSION

J. H. EPPERSON, Health Officer, Durham: The question of milk control is one which concerns every health organization more or less but more especially if an urban population is to be dealt with. Public Health activities of most Departments are divided into two distinct programs of work., viz., work of an educational nature which is conducted without the aid of the law, and work which, if effectively handled, must necessarily be backed up by legislation. We, as health officials, naturally prefer to deal with that phase of public health work which does not take us into the courts in order to accomplish the purpose desired. Milk control is one phase of public health work which must be backed up by effective and fair legislation, legislation which is fair to the producer as well as the consumer. Unless the legislation is fair to both parties and then intelligently administered by an efficient milk control officer, in my honest opinion the ends of justice will not be met to the public who purchase the product and to the farmer dairyman who produces it.

In my experience as a milk control officer I have always endeavored to deal with the dairyman as a human being, and by honest educational methods attempt to show him that improved methods of milk handling and milk production were as much to his advantage as to the public who consumed his product. Ninety-nine dairymen out of every hundred appreciate absolute fair play and honest inspection methods. They like to have confidence in the inspector and look to him for help in time of trouble.

On the other hand there are some few people who drift into the milk business that are hopeless from the beginning, and the sooner the inspector dispenses with them the better it will be. There are times when it is necessary to resort to law in order to accomplish the desired results, but I rather prefer to stay out of court with the dairyman if it is humanly possible to do it, because you have to deal with him as long as he is in the business of producing milk and one case before the court usually causes him to carry on his business because of the fear of the inspector rather than honest coöperation with him.

The North Carolina State Board of Health has recently adopted a "Standard Milk Ordinance" which is now being adopted by many municipalities throughout North Carolina. I recommended to the Durham County Board of Health that the ordinance be adopted because after careful study I sincerely believed it to be an improvement over any milk regulation that I had ever had the privilege to study. I believe it fair to the producer as well as the consumer. It is true that its provisions are quite rigid in many respects but in no instance does it appear unfair. It is so designed that the dairyman who does not choose to practice the very best of methods of production and handling may be penalized by the demotion grades and the ends of justice be met by having the attention of the consumer called to the falling down of the grade. This is more punishment than any court can place upon the dairyman, and in most in-

stances he is ready to talk business with the inspector in regard to reëstablishing his former mark.

The standard milk ordinance has many advantages over the various types of local legislation found to exist in the numerous cities of North Carolina. By the Standard Ordinance it is possible for the housewife moving from one city to another to know the exact grade of milk used in the home once she has become familiar with the grading scheme used in any one of the cities where she has formerly resided. Another advantage which I see in the ordinance is the fact that it has the backing of the State Board of Health. This enables the local officials to inform any objectors, political or otherwise, that it is not a pet scheme of the local Health Officer, but a regulation which is unanimously in force in the other cities of the state. The greatest advantage we find in the regulation is the fact that the old numerical system of rating items of sanitation at the source of production is done away with, and in lieu thereof, a system of grading substituted which is so simple that even a person with very little experience and training may easily determine the rating of the dairy in question. This does away with the arguments between the inspector and the dairyman about some technical point which heretofore the dairyman has not been able to understand when he had to accept a numerical score. This one feature alone, in my honest opinion, will bring much peace of mind to the producer and enable the dairy farm inspector to render a better community service.

Dr. S. A. Nathan, Chapel Hill: The Chapel Hill Board of Health had a meeting on March twenty-seventh which recommended to the City Council that an ordinance be adopted. That Council meets today, so I believe it will be safe to put in Mr. Miller's paper that Chapel Hill has adopted it. My community (Chapel Hill and the University) is a little different from other communities. I will have no trouble at all with Grades B and C. The people living in my community will demand Grade A milk, so the other classes will disappear.

EVENING SESSION

Dr. L. L. Williams, President: The first speaker on our program for this evening will be introduced by Dr. L. B. McBrayer.

Dr. L. B. McBrayer, Secretary, Medical Society of the State of North Carolina: It is a pleasure to present the first speaker of the evening. The probability is that the most important thing in health work that is before us right now is health education, personal hygiene, and nutrition. The speaker is probably more competent to speak on this phase than any one else we have in our state. She has made a special study of this work at Columbia University under Dr. Woods and Dr. Williams and others; she has had personal experience in Iowa and with the National Tuberculosis Association as Assistant Director of the Child Health Education Department, and in this state, to a limited degree, and she has prepared what Dr.

Charles J. Hatfield says is the best book on this subject ever written, published by the National Tuberculosis Association. There is a book now on the press in which she has collaborated with Dr. Woods, of Columbia University, or rather he has collaborated with her, and there is another book to come, I believe. These books are the last word on this subject at this time. It is a pleasure to present Miss Dansdill, and she is expected to live up in her remarks to all I have said.

A PROGRAM OF SCHOOL HEALTH EDUCATION

THERESA DANSDILL, A. M.

DIRECTOR HEALTH EDUCATION, NORTH CAROLINA TUBERCULOSIS ASSOCIATION

For some time the problem of the undernourished child has occupied the attention of the forward-looking health authorities and educators in North Carolina. Our schools have children greatly undernourished, many of them in homes where wholesome food is easily available, others in homes where parents can not or through lack of information do not supply the children with adequate nourishment.

In February, 1925, the Durham Department of Health, the North Carolina Tuberculosis Association and the Durham Woman's Club began a school health program for Durham County. They had two main objectives.

1. To try to salvage the undernourished child.
2. To encourage and to promote good health habit formation for all the children.

The ideal school health procedures are to have an intensive program for the seriously undernourished child whose needs are different from the well or even the near healthy child. A general program of daily health instruction, physical, mental and social, should be promoted for all the pupils, at least in the grades. If these two objectives were attained as they shall be in the not too distant future, the health program in the high school could be one of suggestion, election and occasional checking of health habits with perhaps a required course in personal hygiene for the senior year.

In varying degrees, undernourishment exists practically in every school in the land. Its prevalence to so great a degree in the schools with pupils mostly from the homes of the well-to-do proves that there are other factors than food which contribute to the sources of malnutrition.

According to our records, the causes of undernourishment in the Durham schools were in the order named:

1. Bad health habits.
   a. Faulty food habits.
   b. Insufficient sleep.
   c. Inadequate rest.
   d. Too little outdoor exercise in the sunshine.
   e. Unwholesome mental attitudes.

2. Insufficient food.
3. Physical defects.
   a. Teeth.
   b. Tonsils.
   c. Adenoids.
   d. Vision.
4. Lack of knowledge on the part of the parents.
5. Inheritance of weak tissue.

The preliminary steps of the program were:

1. Weighing and measuring all the pupils in the grade schools.
2. Classification of pupils into groups—7 per cent, 10 per cent, more than 10 per cent underweight as judged by the Wood-Baldwin index.
3. Examination of the pupils for physical defects.
4. Tentative selection of pupils for the nutrition classes.
5. Visiting the homes and securing the consent of the parents for the child to be enrolled in the class and the promise of coöperation in trying to carry out the recommendations of Dr. A. S. Campbell, and the nurses.
6. The organization of classes, the enrollment not to exceed twenty for each class.
7. Distribution of nutrition chore records, choice of a name, for the class, or club, as it is sometimes called.
8. Decision of time and place for the weekly meeting.

It was planned to give mental tests to each pupil in the nutrition classes. The services of a trained psychologist for this work were donated by the University of North Carolina. The completion of other projects begun earlier in the year necessitated this work beginning too late for all the pupils to be examined for a scientific correlation to be made. Valuable data was secured, however, which will serve as a nucleus for further work along this line in the future.

When the February weighing and measuring of the children were completed the number from 7 per cent to 10 per cent or more underweight reached a total of 970. In this were some of the high school students who were prospective members of a class. This was entirely too many pupils to be taken care of efficiently because of the intensive work necessary for a successful nutrition program. Each nurse selected the pupils, who, in her estimation, needed most the special work as outlined in the nutrition classes. Eleven classes of twenty pupils each were organized and one rural class of ten. These children were 10 per cent or more underweight. Later a class in the Mangum Township school (consolidated rural) and one in the Durham High School were organized.

Dr. A. S. Campbell gave a thorough physical examination to each pupil and recommended the procedures which in his estimation would be of greatest help to the child. He also visited the classes and helped to keep the work progressing along the best lines.

The nutrition chore records issued by the National Tuberculosis Association were used in the special classes, the regular Crusade

records were distributed to all the other pupils in the grade schools of the city and to a number of rural schools.

The weekly procedures followed by the nurses with the nutrition classes were:

1. To meet the class at least 40 minutes once a week, giving individual members more attention if thought advisable.
2. To weigh each member of the nutrition class once a week and to chart the weight on his graph.
3. To ascertain if possible, the reason for the existence of no gain or of a definite loss.
4. To inspect the nutrition folders of the pupils, commenting favorably on a good performance, ascertaining the cause of a poor record.
5. To give lessons, talks, to tell or read stories, poems, then emphasize the desirability of milk, fresh vegetables, fruits, thorough mastication, sleep, rest, sunshine, fresh air, especially in the sleeping rooms, cleanliness, regularity and wholesome mental attitudes.

The highest type of program for health education includes procedures which help to keep the well child healthy by training him in the formation of good habits that promote health. The teachers in the schools gave a definite place daily on their programs for health instruction. The modern Health Crusade chore folders were kept wonderfully well.

The children in the nutrition classes were served a mid-morning lunch and a noon-day lunch. The pupils whose parents could afford to pay for this food did so, the lunches of the children whose parents could not afford to pay were financed by the Woman's Club through the Christmas seals. Ninety-one children of the two hundred and sixty in the nutrition classes were fed, thirty-three worthy pupils in the Crusade were fed, and one boy was given breakfast, mid-morning and noon-day lunches.

Cots and blankets were installed in each school where space could be found for them. The children had a thirty minute rest period following the mid-morning lunch. The majority of them actually went to sleep each day which shows their need for this rest. They were also encouraged to take a rest period at home immediately after coming from school. Where cots could be installed the children took an afternoon rest period. This brought fine results.

FINANCES

Approximately 50 pupils in the city schools of Durham would have failed to make their grades had they not been given instruction in good health habit formation. Their mentality was good but they were handicapped because of ill-health, physical defects or bad health habits. It costs approximately $44.00 per year to educate each pupil in the public schools of North Carolina. Have the nurses and teachers working together in close coöperation with the Board of Health and the North Carolina Tuberculosis Association saved Durham $2,200.00 this semester?

One boy was anti-social, hard to manage and stole money whenever he could get it. The principal learned that he always spent this money for food. An investigation of the home revealed conditions that were pitifully poor. Breakfast and mid-morning and noon-day lunches were privided for this child. At the end of the second week he showed a decided improvement which has progressed steadily forward. He is happy, merry, considerate of others and is entirely a different boy from the hungry little man who was a potential criminal. Is it not nearer the Divine teaching to keep one from going astray than to demand a penalty later for wrong-doing?

A nutrition campaign need not be expensive, Probably every county in the state can not get the nearest approach to a perfect coöperation that Dr. J. H. Epperson has here, but paying all expenses a demonstration need not cost a big sum of money. The tuberculosis Seal Funds in almost any county in North Carolina would amply finance a school health campaign.

The school nurses on the regular staff of the Durham Health Department carried on the nutrition work. Their salaries were financed from the regular budget appropriation for the year, Miss Dansdill's salary was paid by the North Carolina Tuberculosis Association.

The Crusade was carried on by the teachers in the opening exercises period each morning. Over 5,000 children were enrolled. More than one-half of the pupils carried the 12 weeks course through to a successful close.

The use of the cots and blankets were donated by a local armory and School Board. This generosity materially decreased the expense of the campaign.

SUMMARY

1. The height and weight tables are but an index and should not be used to base any definite conclusions upon physical well-being.
2. The problem should be attacked from the positive rather than the negative.
3. The program should stress to prevention instead of correction.
4. In conducting a nutrition demonstration the thought should be kept in mind to take conditions as they are expecting no spectacular reforms or results, attempting to secure the best possible development under existing circumstances that cannot be changed.
5. The best results can never be obtained until training in the formation of good health habits has a definite regular place on every grade school program.
6. Cots and rest periods are very desirable for a school nutrition class, but they are not essential.
7. An organized Seal Sale Campaign would provide ample funds for a nutrition demonstration.

RELATION BETWEEN PUBLIC HEALTH AND PHYSICAL EDUCATION

Miss Gertrude Barto Warwick
Director of Physical Education, High School, Durham

Although the public is being more generally educated on health subjects, we are still fighting the popular notion that "Nutrition" means fattening up an anemic underweight and that "Physical Education" means only development of muscles. I might cite a case in a woman's college in this state, where parents asked that their daughters be excused from taking part in the physical education program, because they didn't want them to develop into the masculine type of woman, since, in their minds, this was what physical education meant.

Yet every organization of child welfare, public health, and of physical education, is working towards the same objective—a healthy normal child. Public health organizations strive towards prevention of communicable diseases, nutrition, and the elimination of every defect that retards the normal growth of the child.

Physical directors are interested in the growth of the body by increased muscular activity, which brings about the following results:

1. Increased circulation.
2. Exercise demands a greater supply of oxygen.
3. Muscular process of digestion is improved.
4. Heart is strengthened.
5. Posture is improved by strengthening of abdominal, neck, and back muscles.
6. Exercise increases nerve, muscular activity, resulting in greater skill, accuracy, endurance, poise, and strength.

Some authorities are still unconvinced that physical education and health education are almost interchangeable, yet at a recent convention of physical directors, the suggestion came from a prominent health educator that we change the name of our profession to that of health education, since our field covered more than the physical aspect. Certainly in one phase alone there is a correlation in the well known fact that any youngster, in order to be eligible for competitive games and sports, will observe all health rules.

I think it is admitted that no teacher gets closer the real boy or girl than the one that directs his health and plays his games with him. Certainly, if that boy or girl learns the joy of a healthy body, and the high ideals of good sportsmanship taught on tennis and basketball courts, baseball and football fields, while young, his chances of becoming a useful, highminded citizen are well grounded.

Therefore, it seems to me that in case the school has no special nurse of its own, the ideal department to place health work under is that of physical education. If there is a nurse, then the two departments should coöperate.

One of the greatest difficulties will be found in the fact that a great many of the so-called directors of physical education are merely coaches, and no better trained for this work than any other teacher. A graduate of a college or a normal school of physical education has a fundamental knowledge of the human body equal to that of a first year medical student, and special training in health work.

In connection with the special health work now being conducted by Miss Dansdell in Durham, we have a class at the High School composed of 20 underweights. These children were weighed, measured, and given a thorough physical examination by the school doctor and nurse. They were excused from regular classes in physical education, given a lunch at 10:30 daily, then they rest three-quarters of an hour on cots furnished by the school. We have secured coöperation of the parents, who superintend their diet and rest at home.

The results for the first seven weeks are as follows:

1st	week	15½	lbs. gained,	8¾	lbs. lost.
2nd	week	9	lbs. gained,	16	lbs. lost.
3rd	week	24	lbs. gained,	2¼	lbs. lost.
4th	week	7	lbs. gained,	1½	lbs. lost.
5th	week	12½	lbs. gained,	4½	lbs. lost.
6th	week	2½	lbs. gained,	8¼	lbs. lost.

Another interesting experiment in health work has come in our High School Girl's Club, organized by our dean of women, Miss Helen B. May.

The entire club, composed of all girls in Senior High, is divided into two competitive units—the Imps and the Peps. All school activities are included in its point system.

We have a small printed slip with the health chores, which if a girl keeps faithfully for 7 days, wins three points for her side.

This experiment has been a great success. The number of girls keeping these chores has been as high as 120 out of about 275, and the average runs from 75 to 100 per week. We notice a brightening of the eyes and a healthy glow in the cheeks of our faithful ones, which we point out to our weaker members, for you know the art of being beautiful is very dear to the feminine heart.

We are all looking forward to that glorious day when disease will be almost unheard of, and an unhealthy body a disgrace. Meanwhile let us turn our minds toward educating our people on how to be healthy, and the future generations will take care of themselves.

DISCUSSION

Dr. L. B. McBrayer, Southern Pines. We are indebted to our state and national departments of agriculture for a good deal. Some of you have had the pleasure, and I hope all of you will, of driving through the beautiful peach orchards of this section. Perhaps it is not too much to wish that a little later you may have a taste of the fruit borne in such large quantity by these orchards. The Department of Agriculture has lent us a health officer, and we have had

him for three or four years. He knows what trees ought to have in the way of food, and when they ought to have it. He knows when the trees ought to be sprayed in the winter to keep them from having certain pests, and we do just as he tells us. Then in the spring, when the blossoms begin to burst forth in all their beauty, he tells us how to spray the trees to keep a little bug called the curculio from stinging them and causing wormy peaches, or perhaps causing the peaches to drop off. The horticulturist is doing great work. So far the men owning the orchards have not had to pay this man anything. The Government has been furnishing him.

Thanks to the Bureau of Animal Industry, we know how much food a cow needs to support her body, and what kind of food. We know that in order for that cow to give milk she must have some food in addition to that necessary to support her body. We know if she is to bring a healthy, lusty calf that is going to make a fine milk cow she has to have a certain kind of food. We know that she has to have one pound of grain of certain kinds for every three pounds of milk, and unless she gets that she does not give the milk. Mr. Tufts has had that for his cows. The man in charge of his dairy down there is getting more money than any health officer in North Carolina that I know anything about. That cow is fed until she produces more milk and more butter fat than any other cow of the breed. That is being done here not only by Mr. Tufts but by dairymen throughout the state and throughout the United States. It is an economic problem.

I might go on and mention a number of other things. I shall say one thing more about the cow. If you are going to build up your dairy you have to produce calves that will be better than their mothers were. A cow can not be turned out on a bare pasture to subsist as best it can. It has to be fed and properly fed, just as a mother has to be fed. The simile could be carried on to a great many other things. As a matter of fact, we have learned how to take care of, to feed, to raise all kinds of animals and vegetables and flowers—all kinds of animals but one, and that is the human animal. And it can be done, just as explained to you tonight. Of course, if the feeding of that boy that was going to land in jail pretty soon produced a debit balance, it is dead wrong to do it. You ought to let it go on until he becomes a confirmed criminal, then take him into your million dollar court house and get your high priced solicitor and one or more judges to try him and sentence him to the chain gang, and then weep crocodile tears because he is not fed right. We are working at the wrong end—absolutely the wrong end. People have the idea that it is awful to waste money in saving a boy from being a criminal; just let him go on and they will lavish money on arresting him and putting him in jail and on the chain gang. We may waste money then supporting him, but that does not matter.

If I had time I should be glad to endeavor to deliver an eulogy on the success of the health work in North Carolina, but everybody

knows about it all over the world, anyway, so it is not necessary. But don't think we have finished the job, by a whole lot, for we have just begun. The next step—and it will be the most important step the health workers of North Carolina have ever undertaken—is the education of the children of North Carolina in health habits and the proper nutrition of their bodies.

Dr. J. H. Epperson, Health Officer, Durham: Miss Dansdill has told you some of the results accomplished in the nutrition demonstration now under way in the city and county of Durham. We are indeed very grateful to Miss Dansdill and Dr. L. B. McBrayer for the great service which is now being rendered to the citizenship of our county. I am firmly convinced that this piece of work will be far reaching in the results which have and are to be accomplished.

At the present time in Durham County a campaign is under way looking toward the erection of a $250,000.00 tuberculosis hospital. We hope to hold the election in June of this year and if successful we shall then have a very well rounded program of work under way against the Great White Plague. We expect to continue the nutrition program again next year also the Modern Health Crusade work.

Dr. Cyrus Thompson, Jacksonville: Whenever I hear discussions of this sort going on I do not know that I feel exactly like getting into them, but I do feel very much interested in them and sometimes I should be inclined to say something myself but for the reason that perhaps a man sometimes says too much. You remember the story of the fellow who asked the girl to marry him, and she said yes. When she said yes he sat right still, and she wondered at his lack of volubility when he had been so earnest before. She said to him, "Why don't you say something?" He said, "Well, I fear I have said too much." I am like that; I have talked a great deal in my life, and I am now reaching the patriarchal stage and fear that perhaps I have said too much.

I see the absolute necessity of doing something for the human race. I was immensely impressed by my good friend McBrayer when he said we are doing more for peach trees than we are doing for the human race. I was impressed with that, and I am impressed by my own thoughts which come to me when I am going quietly along, in this wise—that the only thing in the world that has any inherent value in it is a man, and the other things take their value from the man and they are more valuable in proportion as the character of the man is better, and, while that is true, we are paying exceedingly little care to the right rearing and strong building of character in our children. But I must not say anything about that, for fear some one might say I am pessimistic. I have lived here all these years, and have lived so delightfully and so happily that I should be willing to go through a score again, or more scores.

Now, the paper announced by the president is "The Purpose and Value of Epidemiological Investigation. The speaker is a guest, and a stranger to us. You see he is not a small man. He has titles

here—A. B., M. D., Dr. P. H. You see we are making progress all the time. I shall not mind so much going away, but that so much will be going on and I shall not be here to see it. Babson said that twenty-five years from now most of the traveling will be by airplanes and automobiles. I am going to die in about ten years, and I know they are going to play the devil directly after I am gone. I hope in the Providence of God, Who guides and directs everything, that we are making progress toward that one far off, definite event which poets have all believed the world moves toward.

I am requested to introduce the speaker, Dr. James Angus Doull. I wish to say that Dr. Doull graduated from Dalhousie University with the degree of A. B., 1911, and M. D. C. M., 1914; that he was granted the degree of D. P. H. by the University of Cambridge in 1919; that he was Provincial Inspector of Health for Nova Scotia, 1919-1920; that Johns Hopkins University granted him the degree of Doctor of Public Health in 1921; and that he has been Associate Professor of Epidemiology in Johns Hopkins University since 1921. During the war he was a major in the British service, and saw service in France.

Now, a man like that is worth hearing. He may not be our sort of folks, but our sort of folks can certain learn something from him.

Dr James Angus Doull: It gives me peculiar pleasure to speak to the health officers of North Carolina, because it is here that real health work has been done. No one knows that better than the *other folks.* Nowhere in the world has such health work been done as in this state. The work done by Dr. Rankin and his health officers has not only reduced your own death rate, but has been a tremendous influence in health work all over the world.

If I have chosen tonight what seems to be a technical subject, it is not at all that I wish to be highbrow in my views, but I wish to show what can be done by health officers to advance our knowledge of the methods of control of infectious diseases.

THE PURPOSE AND VALUE OF EPIDEMIOLOGICAL INVESTIGATION

James A. Doull, M. D., Associate Professor of Epidemiology
The Johns Hopkins University

Until comparatively recent years, observation of the circumstances under which disease occurs under natural conditions was the only method available in the study of the nature and means of spread of infectious diseases. Medieval physicians had observed the contagiousness of measles, smallpox, scarlet fever and syphilis, and early in the nineteenth century typhoid and diphtheria were shown to be transmitted by contact. The brilliant, but at the same time laborious, investigations of John Snow had produced incontravertible evidence of the transmission of cholera by drinking-water, and the pain-staking researches and profound logic of William Budd had demonstrated beyond doubt that the same vehicle could trans-

mit also typhoid fever. With the development of the sciences of bacteriology and experimental medicine, however, the older epidemiological method has played a less conspicuous part, the attention of practically all workers being turned to the study of the parasitic agents of disease and their various biological characteristics.

Without minimizing in any way the wonderful triumphs of the experimental laboratory, it is at the same time true that many of our most important facts and conceptions still rest solely or chiefly upon epidemiological evidence. Among these are:

(1) The evidence of the infectious nature and the communicability of certain of our common diseases:

(2) The immunity resulting from an attack of certain common diseases:

(3) Definite and characteristic differences between diseases with respect to season, age-distribution, geographical distribution and periodicity:

(4) The relative importance of various modes of transmission as actual factors in disease prevalence; and

(5) The particular conditions responsible for local prevalence, whether temporary (epidemic) or continued (endemic).

Opportunities for satisfactory field studies have in the past few years been very greatly increased. Epidemiology has gained not only by the advances of the experimental laboratory, but the very great improvement in the diagnostic ability of practicing physicians. As a consequence, causes of sickness and death are more accurately recorded, and vital statistics, which form the fundamental basis for all public health work, have become much more reliable. Biometricians have made great advances in the technique of handling such data. Further, in this country and particularly in your state, recent years have brought about great improvements in public health administration. Many counties and cities now have more or less complete health units. Notification of certain, at least, of the infectious diseases has reached a high standard. The machinery for epidemiological investigation has been set up, but as yet few health officers seem to recognize that this machinery constitutes their laboratory equipment, and that their opportunities for studying the natural phenomena of disease are far superior to those of the older investigators.

In recent address, Professor W. H. Frost has outlined what he considers to be the work which remains to be done in epidemiology, as follows:

"(1) The extension of experimental investigation, the exact limits and potentialities of which cannot be definitely foreseen. This has been, and presumably will continue to be fostered largely by institutions for research and by the larger national and state organizations rather than by local health departments.

"(2) The extension and improvement of broad statistics of morbidity and mortality. This is definitely a function of administrative public health agencies, and of fundamental importance; but

it is so generally recognized as such that it may be passed over with mere mention.

"(3) A more systematic, detailed and critical study of the relation of morbidity and mortality not to the broad conditions, but to the intimate details of community, domestic and individual life. This requires observations, records and analyses in more minute detail than is practicable in broad statistics covering the area of a nation or a state; but not in more detail than is practicable for an adequate local health department; and this phase of investigation is, I believe, the special function of the local health department in the field of epidemiology."

The feasibility and usefulness of such studies as Dr. Frost emphasizes in his third paragraph cannot be better illustrated than by reference to the well known work of Dr. Chapin in Providence. Dr. Chapin has for many years secured detailed records of the cases of certain communicable diseases notified in Providence, particularly of diphtheria and scarlet fever. Primarily his records differ from those of others in being carefully planned at the outset, in having been continued over a long period of years and in the recognition of the importance of the collection of detailed information concerning not only the case itself but also concerning those who have been intimately exposed in the home.

On the occasion of the Tenth Annual Session of your Association, and in his introduction of Dr. Chapin, Dr. Rankin spoke of the saving in money to the state by the discontinuance of the use of gaseous disinfectants, and quite rightly credited this saving to the work of Dr. Chapin. As this matter is of considerable practical importance and as the procedure is still widely practiced, it may be worth while at this point to consider the sort of evidence which led to the conviction that disinfection by gas was useless in the prevention of infectious disease. It may serve further as an illustration of the fact that the deductions of the experimental laboratory require to be carefully checked by observations of disease as it occurs in nature.

From a study of records of both scarlet fever and diphtheria covering approximately twenty-five years, Dr. Chapin found that:

(a) Recurrences within 60 days after release in families in which diphtheria or scarlet fever had occurred, were not more common during a period of years in which disinfection was not practised, than during a previous period in which disinfection was the rule.

(b) The development of the disease in well persons who removed from home during the sickness and returned after the warning sign was removed, was an occurrence not more frequent after 1905, when disinfection was practically discontinued, than before that date.

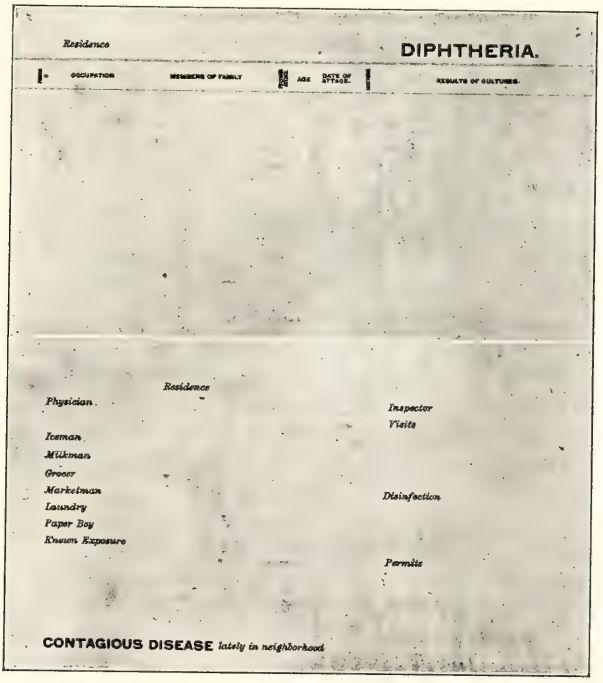
(c) The spread of the disease to other families in the same house being noted, it was observed that approximately the same

proportion of additional families was attacked in the disinfection as in the non-disinfection period.

(d) The proportion of recurrences to total cases was not higher in Providence for a period in which gaseous disinfectants were not used, than in Baltimore where such a method of disinfection was practiced.

Now in order to obtain such information it is necessary to enter on the record of each case the date of onset, the age of the case and of each contact, the date of removal and return for each contact who removed, and for each individual the statement whether or not he had suffered from a previous attack. In the case of scarlet fever, for example, in which a previous attack confers definite and lasting immunity, "only those removals mostly under 14 years of age, who never had scarlet fever, are included."

Photographs of the diphtheria case-card used in Providence are here reproduced.



The collection of such material enabled Dr. Chapin to measure the benefit to the family of other administrative measures, such as the removal of the case to hospital and the removal of contacts from home. In both diphtheria and scarlet fever he found that the risk of attack for family contacts was much reduced by hospitalization of the case, and that in home-treated cases it was even more reduced by removal of the contacts from the infected home.

Few health officers realize that even in the case of such a disease as diphtheria, about which we probably know more than we do of any other, the need for such studies is still pressing. Although diphtheria is commonly rated as one of the diseases most effectively and scientifically controlled it now stands first among the specific acute infections as a cause of death in the U. S. Registration Area, excepting only influenza and pneumonia. Moreover, while the death rate from diphtheria has declined greatly since 1900, the rate of decline has not been much reduced in the last decade. This is in striking contrast to the death rates from tuberculosis, typhoid fever and scarlet fever, in which the decline continues.

The present almost stationary death rate from diphtheria gives cause for the more serious concern because, as mentioned above, we already know so much about the etiology, treatment and prevention of the disease. We have, for combatting it, practically all the weapons which science may be expected to provide, namely; simple and reliable means for the bacteriological diagnosis of cases and carriers; a simple test for antitoxic immunity; apparently effective means for active immunization and a highly effective therapeutic serum. Moreover, health departments are and have been for some years devoting more money and effort to the control of diphtheria than to any other acute infection. That the death rate should remain so nearly stationary in the face of this armament and effort would seem to indicate unmistakably that we are not making effective use of the weapons provided. Further studies of the disease to ascertain the weak points in present control measures and to point out a practical line of more efficient effort are, therefore, urgently needed.

Because of these facts we have been carrying on at the Johns Hopkins University more or less comprehensive studies on the epidemiology of diphtheria, and I venture today to discuss in a general way some of the problems to which our attention has been turned.

Through the coöperation of Dr. C. Hampson Jones, Commissioner of Health of the city of Baltimore, and his associates, all of the cases of diphtheria notified since November, 1921, in an area comprising six contiguous city wards, have on report been assigned to us for investigation. At the same time we have carried out in these wards extensive surveys to determine possible seasonal fluctuations in the frequency of diphtheria carriers and we have also endeavored to ascertain whether at the present time it is possible to appreciably lower diphtheria incidence in the central ward of the area by means of toxin-antitoxin immunization.

To June 30, 1924, using an epidemiological case-card fundamentally like that of the city of Providence, but rather more detailed, we have studied 1,031 cases, exclusive of those in which the diagnosis was withdrawn by the physician after at least two negative cultures, and exclusive also of a number of cases considered by us to have been incorrectly diagnosed.

Of these 1,031 cases, 55 died, a case-fatality of 5.3 per cent. A striking feature is that of 50 of these deaths 8 had received ten thousand units of antitoxin or more, within forty-eight hours of the beginning of the illness as noted by the parent. The remainder of those who died did not have a fair chance for life owing to the neglect or ignorance of the parent or to delay on the part of the physician.

In a series of five hundred consecutive cases contact with a known or suspected cases within a period of two weeks prior to onset was shown to have occurred in less than 20 per cent. The remaining four-fifths for the most part must owe their infection to contact with carriers or missed cases. The difficulties of carrying on such a study in a large city are great and it is probable that similar investigations in rural districts would show a much higher proportion traceable to direct contact with previously recognized cases, and would enable us to evaluate more accurately the relative importance of cases and of carriers.

At the time of report it was found that approximately 12 per cent of family contacts who were cultured had diphtheria bacilli in the nose, throat or both. Of those negative on primary culture 15 per cent were found positive when release cultures were taken. There can be no doubt that if cultures were taken every day a still higher proportion of these intimate contacts would be shown to be infected. Children under ten are about three times likely to be carriers as those over forty years of age, but no constant differences are observed between the sexes. About 65 per cent of such carriers are found to harbor virulent organisms.

The value of the prophylactic use of diphtheria antitoxin for young family contacts is well illustrated by a tabulation of our records. It has been found that of children from six months to five years of age, exposed to diphtheria in the family and not given prophylactic antitoxin, fifteen per cent are attacked, for the most part within thirty days of onset of the primary case. Of those given antitoxin less than two per cent are attacked. The point has been raised, notably by Hitchens, that these secondary cases run such a small risk of death, owing to the probability that they will be under close medical supervision, that contacts should not be subjected to the risk of death from anaphylaxis. Now, while our experience is too small to give figures of value one way or another, a report by Kelley shows that in Massachusetts in the year 1922 the case fatality for such secondary cases of all ages was 2.2 per cent. Presumably it was much higher for young children. Now at a death rate of 2 per cent and an attack rate of 15 per cent one contact in 333 exposed will die. According to the best statistical record which is available, that of Park in New York, the risk of death from antitoxin is in the neighborhood of 1 in 75,000. The risk of death from diphtheria then for children of six months to five years of age exposed to diphtheria in the family is something like 225 times as great as from anaphylaxis.

During 1921 and 1922 in order to determine possible seasonal fluctuations in the frequency of diphtheria carriers, we made three surveys of Baltimore school children, the first in November and December, 1921, the second in February and March, 1922, and the third in May and June, 1922. Approximately 7,800 children were cultured in all. The children were selected in such a way as to ensure a fair sample of the school population. Every sixth child in the first and second and every fourth in the third survey was chosen, in alphabetical order as appearing on the teacher's roll, and the schools were selected entirely without regard to their diphtheria history. The cultures were examined in the laboratory of the department of immunology of the School of Hygiene of the Johns Hopkins University. In the first period 3.3 per cent of the children were found to harbor virulent organisms in the second 1.5 per cent, and in the third 0.9 per cent. The seasonal distribution of carriers therefore closely approximates that of clinical diphtheria, a result which, after all, might have been expected.

Knowing the great risk of attack to which family contacts of clinical cases are subjected, we were very much interested in the fact that in the families of 104 white carriers of virulent bacilli, no clinical cases were reported within a period of six months from discovery and only one case between six and twelve months after discovery. In a period of a year in the population represented by this number of carriers two or three cases would have been expected had these individuals been subjected only to the known risk of the general poulation of Baltimore.

What is the meaning of this phenonenon? So far it is unexplained. It has been observed by other workers notably by Doctor Chapin in Providence and by Doctor Park in New York. A careful study of a much larger number of carriers in Baltimore, more than one thousand in all, has brought out the fact that during the first month after discovery there is a slight increase in the attack rate in their families over what would be expected had these persons been subjected only to the risk of the general population of the city. This statement seems to be true, however, only for those carriers found in association with clinical diphtheria in the schools and not for "chance" carriers such as our group of 104 to which reference has been made. Yet these "chance" carriers carry bacilli indistinguishable biologically from those obtained from a clinical case of diphtheria. Guthrie and his co-workers, in fact, have produced clinical diphtheria experimentally in human beings with bacilli secured from a healthy school carrier. The infecting dose in this instance, however, must have been enormously greater than that which usually causes diphtheria in nature.

It may be true, as is often stated, that the nasal carrier is more dangerous than one whose throat is infected, and although it would be quite possible to measure the attack rates in families exposed to nasal and throat carriers respectively, this has not been done. I cannot but feel that while, in the aggregate, carriers may and prob-

ably do cause most of our diphtheria, yet the danger from any individual carrier who shows no clinical evidence of disease, and particularly if he is known to have a negative Schick test, is so slight that it is doubtful whether we have any right to subject him to restrictive measures. Such persons may be an actual asset to the community as immunizing agents.

If the present attack rate continues, of every 100 children born in Baltimore 12 will contract clinical diphtheria before they reach twenty years of age. Of those attacked perhaps 6 will develop immunity as a result of the attack. Of every 100 children, however, approximately 75 develop natural immunity before reaching this age. Individuals probably differ greatly in their response to stimulation, and it may be, as has been suggested, that this power to develop antibodies is an inherited characteristic, but the great immunizing influence presumably is the organism from the carrier. This organism, although still virulent for laboratory animals and still producing toxin, seems to have lost much of its power to produce clinical diphtheria in man. Such an organism theoretically would be best adapted to produce immunity.

In the course of epidemiological investigations of diphtheria cases it was noticed that pharyngeal diphtheria was not commonly seen among children who had had thorough tonsillectomy performed. This observation was of little use, however, until in the course of our carrier surveys, an opportunity was presented to determine the frequency of tonsillectomy among the school children resident in the same area. An opportunity also occurred to study the frequency of tonsillectomy in cases of scarlet fever reported from the same city wards.

The results may be summarized as follows:

"(1) Surveys of the white school population of wards 5, 6, 7, 8, 9 and 10 of the city of Baltimore show that the percentages of children having had the tonsils removed varies from approximately 7 per cent at ages 5 and 6 to 19 per cent at ages 13 and 14.

"(2) A study of a consecutive series of 224 cases of diphtheria of school age and living in the same area of the city showed that only two (0.9 per cent) of the children had had tonsillectomy performed. This is a very much smaller number than would be expected in a sample of this size and age distribution selected at random from the school population.

"(3) In a sample of 193 cases of scarlet fever in children of school age, 19 (9.8 per cent) were found to have had the tonsils removed prior to attack. This number does not differ significantly from that expected in a random sample of the school population similarly constituted as to age.

"(4) These results justify the conclusion that, in the area studied, children whose tonsils have been removed are distinctly less liable to diphtheria than those who have not had this operation performed; whereas in scarlet fever, no significant difference is shown."

In considering the causes for the decline in the death rate from diphtheria so generally observed we must recognize several facts. A certain tendency exists, however, even in high places, to be rather hasty in asserting that the beneficial results which follow the introduction of some specific public health measure, are necessarily to be credited to the application of that measure. It is the duty of the health officer most carefully to study all the possibilities before making such assertions. At the present time, for example, there has been a remarkable reduction in diphtheria morbidity and mortality in certain communities in which toxin-antitoxin has been more or less widely used. That immunization has had some influence and has prevented cases among those who have been treated, no person should doubt, but in most instances the majority of the children reached have been school children who have passed the age of greatest risk of attack and who have, comparatively speaking, a small risk of death from diphtheria. Let us suppose, for example, that the Baltimore Health Department should be able to treat with three doses of toxin antitoxin every child from six to fourteen years of age, inclusive. Now in Baltimore children of this age-group contribute just about one-eighth of our deaths from diphtheria. Suppose it is found that the immunization is effective in about 75 per cent of cases. Then the number of deaths prevented would be about one twelfth of the total or about 8.5 per cent, a result scarcely appreciable in comparison with the effort involved, and one which could be demonstrated if at all, only by a careful study of diphtheria mortality statistics by age over a considerable period of years.

Hope has been entertained, however, and perhaps not unreasonably, that the effect of diphtheria immunization would be felt outside of the group of children actually treated. With the interspersion of immune individuals throughout a population, effective contact between a case or carrier and a susceptible individual should theoretically become more difficult, and the reduction in morbidity and mortality should therefore be greater than would be expected from an estimate based on the proportion of cases which the immunized would be expected to contribute.

In the central ward of our area we have made an attempt to immunize both school and pre-school children with very good success. The work was commenced in the schools and later clinics were conducted for pre-school children. Health department nurses working from conveniently situated clinics visited every home, some seven thousand in all, in the summer of 1922 and a large proportion of the homes for a second time in the summer of 1923. As a final effort during the first six months of 1924 a physician was employed who, being introduced by the child welfare nurse, offered free immunization in the home.

We think that there is now an opportunity for the measurement of the effect of this work. Have we reduced the diphtheria morbidity in this ward? How many cases of diphtheria have we pre-

vented? Has there been any apparent reduction outside of the group of children who actually attended the clinics?

That diphtheria has come down there can be no doubt, but a careful study of the incidence of the disease in other sections of the city shows that there are several wards in which no special effort has been made, which show a reduction in morbidity quite as great as does ours.

Disappointing as this result may seem, it serves to illustrate a most important principle in epidemiology. This is that the most convincing proof is obtained by a comparison of rates or risks which prevail in two groups of people living under the same conditions and differing only in respect to that factor, the influence of which we are attempting to measure.

Living in the particular ward which we are discussing there were estimated to have been, on July 1, 1923, 7,496 white children over one year and under fifteen years of age. Among these children there were reported in the three years 1922, 1923 and 1924, 113 cases of diphtheria. If the attack rates which prevailed in the city at large had prevailed there would have been reported 140 cases. Of these 7,496 children, however, 4.107 had not attended the immunization clinics and among these 104 were reported against an expectancy of 101 cases. The remaining 3,389 children had attended our clinics and had either a negative test or had received toxin-antitoxin. Among these 9 cases only were reported, although 40 would have been expected at the city rates. These figures are the result of a much more detailed analysis which takes into consideration the ages of both groups of children and the period of exposure which is reckoned from the month of treatment or Schick test to December 31, 1924. The methods used, however, are those of simple arithmetic.

In our two groups resident in the same area and similar in age-distribution, there has been a striking difference in diphtheria incidence. The one group has been absolutely uninfluenced by our work and so far as diphtheria incidence is concerned might have been living in another section of the city. The other group shows a reduction in diphtheria of approximately 75 per cent. The only factor in which we know the groups to differ is that while one group attended our clinics, the other did not.

Considering the ward as a whole we are justified in concluding that we have caused a reduction in diphtheria morbidity but this reduction is entirely due to the non-occurrence of cases among those who have been effectively immunized.

It is hardly necessary to state that without concurrent epidemiological investigation of all cases occurring in the area such a study would lose much in reliability and value.

In conclusion, using diphtheria as an example, I have tried to illustrate the value of epidemiological work by reference to some of the problems with which I am most familiar. These are, of course, not the only problems which might have been discussed concerning diphtheria, and another worker might have made a better case for

the study of tuberculosis, infantile diarrhoea or some other disease. I do not maintain that any of the specific problems which I have discussed have been finally settled. A satisfactory answer to the question of the risk involved by contact with the diphtheria case, or carrier, for example, or to the question of the efficacy of toxin-antitoxin, must be found in the experience of many different health departments in different sections of the country. I do maintain, however, that these questions and others of a similar nature can be satisfactorily answered by careful detailed and prolonged epidemiological investigation and in no other way.

DISCUSSION

QUESTION: If a child recovers from diphtheria without antitoxin, would it not have a greater degree of immunity than the immunity a child enjoys if treated by antitoxin? I am not speaking of toxin-antitoxin, but of antitoxin.

QUESTION: What about carriers—do you always let them run at large?

QUESTION: What is the dose of antitoxin for a young child?

DR. DOULL: There are very few records of persons who, recovering from clinical diphtheria without antitoxin, have been Schick-tested. There are, however, a certain number. Dr. Park, I think, states that of six mild cases treated without antitoxin, four gave a positive test after recovery. Second and third attacks of diphtheria are fairly common today, but I do not know how frequent such repeated attacks were in pre-antitoxin days. Presumably recovery takes place by means of the development of anti-bactericidal rather than antitoxic bodies in these cases with a persisting positive Schick test.

As to the question in regard to the dosage of antitoxin for young children, in severe cases, no matter how young the child, I think the dose should be at least ten thousand units. In the Willard Parker Hospital I think the custom is to give about that dose. In that hospital large doses are not the vogue. But practice varies enormously. Some give up to one hundred thousand units. My opinion is that after you give ten to twenty thousand units at one time it is not much use to give any more. I believe it should be given more frequently intravenously. I realize the difficulties with a young child in the home, but it saves several hours and should be done in severe cases whenever possible.

So far as we know immunity from toxin antitoxin will last several years, when once developed. The evidence for it is based on this—there are a good many children now who were treated seven or eight years ago. I think about four per cent have changed, that is have lost the antitoxin which had been developed. The important thing is that the artificial immunity, whether or not it lasts for life, protects children through the ages at which they are likely to be attacked, and most likely to die.

Answering the question about carriers, they are seldom permitted to run at large, in fact the practice is, in most cities in this country, that such persons are quarantined until negative cultures are secured. Please do not take any statement that I make as being what is now official practice in any particular city. I gave you my opinion that carriers are not nearly so dangerous as is commonly thought. There has been very little modification, however, in the rules regarding their control. Detroit permits carriers who are not known to have been in contact with cases to attend school. If they have a negative Schick test, even if they have been in contact with a case, I think there is little danger. On this point, as on many others, we are badly in need of data.

Dr. L. J. Smith, Wilson: Why is it that we depend upon the toxin to give immunity, in toxin-antitoxin, and yet we do not get immunity always from a case of diphtheria? It is a thing that I just can not understand scientifically It may be true as a fact, but I do not understand it scientifically. What is the reason we do not get immunity always from an attack, and yet do get it, in the majority of cases, from toxin-antitoxin?

I should like to ask, further, why such a large percentage of adults will give a positive Schick, as compared with children. It is very noticeable in my work that the teachers give a higher percentage of Schicks than the children, and I am wondering if it is not possible that we get a serum reaction instead of the true Schick reaction.

Dr. Doull: I do not know why all people that recover from diphtheria do not develop antitoxic immunity. We have at present, under observation, a child that went through clinical diphtheria, was treated with antitoxin, and had a positive Schick test some three months after. We gave her a series of toxin-antitoxin but failed to immunize her; then gave a second series and failed to immunize her. We have given the third series and are waiting for the result. I expect it to have failed. I believe there is a small percentage of people that you can not immunize, no matter how hard you try. It is true, of course, that about six out of ten of the cases that recover do have immunity, do have antitoxic immunity. In artificial immunization, the immunizing part of toxin-antitoxin mixtures is the toxoid part of the toxin. I am not sure that our artificial immunizing agent is not a little better stimulus than the natural infection.

Concerning the second comment, about the relatively large percentage of positive Schick in adults, it is not our experience where adults and children have grown up in the same community, that adults are found to be less resistant than the children. It may be that your school teachers have come from rural districts, while the children are in towns. That may or may not be true. Otherwise I can not explain it. There are really few records of the results of the Schick test among adults save for special groups. In institutions,

of course, adults are nearly always immune—in insane asylums and places of that sort. I can not suggest any explanation if the children and the adults have been equally exposed to the immunizing agent. Females at puberty are said to lose immunity. This is not established as a fact, but it may be true. I think that certain statistics show a slight rise in the attack rate of females at ages fifteen to seventeen. It may be that at puberty females do lose a little of this antitoxin and do not get it back. More Schick testing of adult groups would settle this point. Zingher's statistics show marked differences between males and females, the males showing a greater proportion of immunes at each age, but our figures show little difference between the sexes. It may be that you have a rural group of school teachers and a group of city children.

You have a great opportunity to study these questions of antitoxic immunity to diphtheria. We know little of the facts concerning the colored race. There are few published data regarding the Schick test in the colored. Is it true that they have less diphtheria than the whites? In the case of scarlet fever it must be true that they have fewer deaths than the whites. Mortality statistics seem to show it also in diphtheria but we are woefully in need of more accurate records of morbidity in both diseases.

Dr. G. H. Macon, Warrenton: In my section we have not many cases of diphtheria among the negroes. In the extreme eastern part of the state, where there are more negroes, it would be interesting to get reports. In my section of the state diphtheria does not occur as often as in the white race, although we do have right many cases of diphtheria in the negro race. Possibly the negro race is a little more mixed than in the eastern part of North Carolina. In some eastern sections thickly populated by negroes, from reports here tonight, it appears that diphtheria is very rare, it is extremely interesting to me to know this fact, for I have never thought very seriously about the difference in proportion. From the very instructive discussions I have certainly learned a great deal about diphtheria.

Dr. Cyrus Thompson, Jacksonville: Negroes in Onslow County do not have diphtheria. I do not recall just now that I ever saw a case of diphtheria in a negro in my county, or a case of scarlet fever.

Dr. J. W. Williams, Washington: We Schicked five hundred children in the white schools and five hundred in the colored schools same ages. 25 per cent were positive in the colored schools, and 34.6 per cent in the white schools.

Dr. E. R. Hardin, Lumberton: I have some figures here that might be interesting. We certainly have had much less diphtheria in our county in the colored race than we have had in the white and Indian races; but the question is whether all the colored cases are being reported.

1922
6 to 18 Years
49 White
9 Indian
2 Colored
—
60

Year 1923
6 to 18 Years
50 White
2 Indian
7 Colored
—
59

Year 1924
6 to 18 Years
16 White
1 Indian
4 Colored
—
21

Year 1925, to Date
6 to 18 Years
3 White
0 Indian
1 Colored
—
4

50 White
4 Indian
6 Colored
—
58

1922
1 Mo. to 6 Years

Year 1923
1 Mo. to 6 Years
28 White
3 Indian
6 Colored
—
37

5 Indian
5 Colored
—
47

Year 1924
1 Mo. to 6 Years
37 White

Year 1925, to Date
1 Mo. to 6 Years
4 White
2 Indian
1 Colored
—
7

Dr. J. E. Smith, Windsor: There are probably more colored people in proportion to white, in my county than in any other county in the state. You seldom get a report of diphtheria in a colored child unless he has died or is very seriously ill. The living conditions of the negroes are such that I expect they develop more immunity than white people; they come in closer contact. I know in the epidemic we had two years ago five negroes died in one day, so I know we had some among the colored people.

Dr. J. A. Morris, Oxford: I wish to report on a colored orphanage which cares for 208 children. The percentage of positives there was 28.6 per cent.

Within one year the physicians of my county have lost two negro children from diphtheria. The ratio of reported cases is slightly lower, but we have lost two cases.

Dr. Z. P. Mitchell, Northampton County: The question was raised by some as to the higher percentage of adults showing a positive reaction to the Schick test. It seems to me that inasmuch as we see so little diphtheria among adults they must simply have developed some serum prophylaxis or prevention, rather than an antitoxin.

In the Schicking that I have done I had an experience like this. One child, a boy to whom I gave the test, was absent from school a week later when I went around to make my test-reading. Upon inquiry it was revealed that this boy was very ill, with sore throat

and fever. The family physician noted the Schick test was entirely negative, but the throat was swabbed and a culture made by Dr. Larkin, who pronounced it almost a pure culture of diphtheria bacilli. The boy had a typical case of diphtheria, typical in every respect at the very time the test should have been read.

A second child, and this one of pre-school age (four years old) Schicked at the same time as the one above, was decidedly negative. Two weeks after the test was given this child came down with a very sore throat. The parents had been warned by me that inasmuch as it was negative to the Schick the child would not likely have diphtheria, with the result that the possibility of the trouble being diphtheria was entirely overlooked by them. When, however, the doctor was called in, diphtheria was his diagnosis. And it was only by the administration of heroic doses of anti-toxin that the life of the child was saved. She came near dying from neglect because of the confidence placed in the Schick test.

To offset the idea that some one may get the notion that these results were due to either poor technique or inert Schick material, may I add that we had 22 per cent positives in this group, which is about the average in my experience.

REPORT OF COMMITTEE ON RESOLUTIONS

Your Committee on Resolutions beg leave to submit the following for adoption by this association:

1. That the North Carolina Public Health Association extend to the management of the Carolina Hotel our sincere appreciation for the many courtesies shown us during this, our fifteenth annual meeting.

2. That this association regrets to know that Dr. W. S. Rankin has severed his connection with the State Board of Health, but it is glad to know that his new duties will not necessitate his removal from the state, and do not entirely take him away from public health activities.

Be it Further Resolved, That this association extend to Dr. Rankin our sincere appreciation for the services and courtesies rendered to the members of this association, both individually and collectively.

And Be it Further Resolved That this organization wishes for Dr. Rankin the same measure of success in his new field of endeavor as he has attained in public health work as Secretary of the North Carolina State Board of Health.

3. That this Association wishes to thank Dr. Doull for coming to North Carolina and giving us the benefit of his rich experience in epidemiological work.

4. That we express to Miss Theresa Dansdill our appreciation for her valuable paper, and that we as members of the North Carolina Public Health Association, lend to Miss Dansdill our coöperation in her public health activities.

5. Realizing that the success or failure of our association depends upon the support of the members of the State Board of Health, we wish, therefore, to acknowledge our gratitude for their presence as well as the presence of many others interested in our work.

(Signed) C. L. Outland,
A. C. Bulla,
S. E. Buchannan,
Committee

REPORT OF COMMITTEE ON VISITORS AND NEW MEMBERS

Whereas, It has been the privilege and pleasure of this association to have present at this meeting a number of distinguished visitors, some of whom are from distant cities, *Be it Resolved:*

That the thanks of the North Carolina Public Health Association are hereby tendered them for their presence and for their participation in the program.

That the association express its appreciation especially of the presence of Dr. James A. Doull, of Baltimore, who took part in discussions and program during our sessions today and tonight.

(Signed) R. L. Carlton,
E. T. Hollingsworth,
W. T. Ruark,
Committee

REPORT OF COMMITTEE ON THE PRESIDENT'S ADDRESS

Be It Resolved:

That this association express its appreciation and thanks to the president for his very able address.

That the part of the address which set forth dates and times of establishment of certain practices and activities pertaining to health work in North Carolina is especially commended to the consideration of every health officer and to other workers interested in the physical welfare of the state's citizens. Our membership, as a whole, is none too well informed regarding when and by whom certain things have been accomplished for better health in North Carolina; therefore this address is most timely.

The address pointed out the practical application of the most modern methods in public health proceedure along all lines, and is enthusiastically commended and endorsed as being of great value to the lay public as well as to professional workers.

(Signed) R. L. Carlton,
E. H. Hand,
E. R. Hardin,
Committee

The above reports were adopted.

Upon motion of Dr. R. S. McGeachy, seconded by Dr. A. C. Bulla, Miss Theresa Dansdill was made a life member of the Association.

Dr. L. J. Smith reported for the Committee on Moving Pictures that the Committee recommended the appointment of Dr. M. L. Townsend to take up this matter, and moved the appointment of Dr. Townsend. Motion carried.

The following officers were elected:
President: Dr. Sidney L. Buchanan, Concord.
Vice-President: Dr. E. R. Hardin, Lumberton.
Secretary: Dr. F. M. Register, Raleigh.

The Association then adjourned *sine die.*

INDEX

A

PAGE

Appointment of Committees 9, 88
Armstrong, Dr. C. W. 25, 28, 49

B

Bulla, Dr. A. C. 21, 43
Byrd, Dr. 52

C

Carlton, Dr. R. L. 27, 38
Committees—
Report of Committee on Resolutions 86
Report of Committee on Visitors and New Members 87
Report of Committee on the President's Address 87
Report of Committee on Moving Pictures 88
Coöperative Nursing and the Health Department—*Miss Clara Ross, R. N.* 33
Discussion by—
Dr. W. S. Rankin 35

D

Dansdill, Miss Theresa, A. M. 64
Development of Rural Health Work in North Carolina and Its Future, The—
L. L. Williams, M. D. 3
Diphtheria, Its Control and Prevention—*A. C. Bulla, M. D.* 21
Discussion by—
Dr. C. W. Armstrong 25, 28
Dr. F. R. Harris 26
Dr. R. S. McGeachy 27
Dr. Charles L. Minor 27, 28
Dr. R. L. Carlton 27
Dr. James A. Doull 27, 28
Doull, Dr. James A. 27, 28, 72, 82, 83

E

Election of Life Member 87
Election of Officers 88
Epperson, J. H. 62, 71

F

Future of Public Health, The—*E. T. Hollingsworth, M. D.* 44

H

PAGE
Hardin, Dr. E. R. 52, 84
Harris, Dr. F. R. 26
Health Work in the Schools—*R. L. Carlton, M. D.* 38
Discussion by—
Dr. A. C. Bulla 43
Hege, Dr. J. Roy 46, 56
Hollingsworth, Dr. E. T. 44

I

Intestinal Parasitism and Chronic Paludism—*W. T. Ruark, M. D.* 9
Discussion by—
Dr. H. A. Taylor 16, 20
Dr. Chas. L. Minor 19, 20, 21
Dr. W. S. Rankin 20, 21

M

Macon, Dr. G. H. 84
Maternal and Infant Hygiene Unit of Public Health Work in Forsyth County, The—*J. Roy Hege, M. D.* 46
Discussion by—
Dr. J. W. Williams 48
Dr. W. T. Ruark 49
Dr. C. W. Armstrong 49
Dr. C. L. Outland 49
Dr. W. S. Rankin 50
Dr. J. E. Smith 51
Dr. E. R. Hardin 52
Dr. Byrd 52
Dr. H. A. Taylor 53
Dr. J. Roy Hege 56
McBrayer, Dr. L. B. 63, 69
McCain, Dr. P. P. 32
McGeachy, Dr. R. S. 27
Methods Used by the Extension Department of the North Carolina Sanatorium in Finding Incipient Tuberculosis, and Why—*D. R. Perry, M. D.* 28
Discussion by—
Dr. Charles L. Minor 31, 33
Dr. P. P. McCain 32
Dr. J. H. Woodcock 33
Miller, H. E., C. E. 57
Minor, Dr. C. L. 19, 20, 21, 27, 28, 31, 33
Mitchell, Dr. Z. P. 85
Morris, Dr. J. A. 85
Motion Picture Producers and Distributors of America, Inc., Letter 9

N

Nathan, Dr. S. A. 63

O

PAGE

Outland, Dr. C. L. 49

P

Perry, Dr. D. R. 28
President's Address 3
Program of School Health Education, A—*Theresa Dansdill, A. M.* 64
Discussion by—
Miss G. B. Warwick, "Relation Between Public Health and Physical Education" 68
Dr. L. B. McBrayer 69
Mr. J. H. Epperson 71
Dr. Cyrus Thompson 71
Purpose and Value of Epidemiological Investigation—*James A. Doull, M. D.* 72
Discussion by—
Dr. J. A. Doull 82, 83
Dr. L. J. Smith 83
Dr. G. H. Macon 84
Dr. Cyrus Thompson 84
Dr. J. W. Williams 84
Dr. E. R. Hardin 84
Dr. J. E. Smith 85
Dr. J. A. Morris 85
Dr. Z. P. Mitchell 85

R

Rankin, Dr. W. S. 20, 21, 35, 50
Register, Dr. F. M. 8
Regulations for Control of Midwifery 54
Relation Between Public Health and Physical Education—*Miss Gertrude Barto Warwick* 68
Report of Committee on Moving Pictures 88
Report of Committee on Resolutions 86
Report of Committee on the President's Address 87
Report of Committee on Visitors and New Members 87
Report of Secretary 8
Ross, Miss Clara, R. N. 33
Ruark, Dr. W. T. 9, 49

S

Smith, Dr. J. E. 51, 85
Smith, Dr. L. J. 83
Stabilization of Milk Sanitation, Practice and Standards—*H. E. Miller, C. E.* 57
Discussion by—
Mr. J. H. Epperson 62
Dr. S. A. Nathan 63

T

PAGE

Taylor, Dr. H. A. 16, 20, 53
Thompson, Dr. Cyrus 71, 84

W

Warwick, Miss Gertrude Barto 68
Williams, Dr. J. W. 48, 84
Williams, Dr. L. L. 3, 63
Woodcock, Dr. J. H. 33